ORDER NO. AD9001007C9

Service Manual

Compact Disc Player

SL-PS70

Color

(K)... Black Type

Area

Country Code	Area	Color
(E)	Continental Europe.	(K)
(EB)	Great Britain.	(K)
(EG)	F.R. Germany & Italy.	(K)
(GC)	Third Region.	(K)
(GN)	Oceania.	(K)
(PX)	Far East-PX.	(K)

SL-P333 MECHANISM SERIES (SIWD113-3ZA)

■ SPECIFICATIONS

■ Audio

No. of channels	2 (left and right, stereo)
Frequency response	2–20,000 Hz±0.3 dB
Output voltage	2 V (at 0 dB)
Dynamic range	96 dB
S/N ratio	112 dB
Total harmonic distortion	0.003% (1 kHz, 0 dB)
Harmonic distortion	0.002% (1 kHz, 0 dB)
Wow and flutter	Below measurable limit
DA converter	MASH* (8 DAC)
Output impedance	Approx. 1 kΩ
Load impedance	More than 10 kΩ
Headphone output level	15 mW max. 32Ω (adjustable)

*MASH

- MASH (Multi-Stage Noise Shaping) is an effective over-sampling D/A conversion technique which realizes a high S/N ratio and needs no highly complex manufacturing processes such as a laser trimming.
- MASH is a trademark of NTT (Nippon Telegraph and Telephone Corporation).

■ Pickup

Wavelength	780 nm

■ General

Power supply

For Great Britain and Oceania: AC50/60 Hz, 240 V
For Continental Europe and F.R. Germany & Italy: AC 50/60 Hz, 220 V
For others: AC 50/60 Hz, 110 V/127 V/220 V/240 V

Power consumption	11 W
Dimensions (W×H×D)	430×126.5×332.5 mm
Weight	5.2 kg

Specifications subject to change without notice.
Weight and dimensions shown are approximate.

Technics

Matsushita Electric Industrial Co., Ltd.
Central P.O. Box 288, Osaka 530-91, Japan

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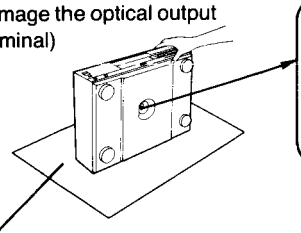
■ PLACEMENT

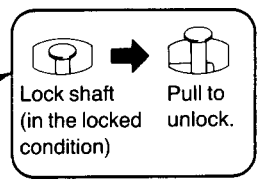
Before placement

The optical pickup is secured to prevent damage during transport. Be sure to release it before use.

(With inclination not to damage the optical output terminal)



Soft cloth or similar material (to prevent scratches)



Note:
When carrying this unit, be sure to remove the compact disc from inside the unit, and press the lock shaft to secure the optical pickup.
(Make sure to place the unit with the rear panel facing downward.)

Notes of placement

■ **This unit is a precision instrument. Be sure to place it on a flat surface.**

■ **Avoid places such as the following:**

- Near any equipment or device that generates strong magnetism.
- On any heat-generating equipment or device, or in any place where the temperature is high (35°C or higher).
- Extremely cold places (5°C or below).
- Near a tuner or TV (It may cause noise in the broadcast, or disturbance of the TV picture.)

■ **When carrying or storing the unit, handle it with care so it is not subjected to any strong bumps.**
Always remove the disc before storing the unit for any period of time.

■ **To avoid problems due to vibration.**

- Do not place a book or similar object under this unit.
- Do not route the connection cables (of this or other units) across the operation panel, across the top, or under the unit.

■ ACCESSORIES

- AC power supply cord 1
  [SJA187: (E, EG)
  SJA193: (EB)
  SJA173: (GN)
  RJA0004: (GC, PX)]
- Stereo connection cable 1 (SJP2249-3)
- Remote control transmitter 1 (RAK-SL5005W)
- Batteries 2 (UM-4NE/2S)

■PRECAUTION OF LASER DIODE

CAUTION: This product utilizes a laser diode with the unit turned "on", invisible laser radiation is emitted from the pick up lens.
Wave length: 780nm
Maximum output radiation power from pick up: 100μW/VDE

Laser radiation from the pick up lens is safety level, but be sure the followings:

1. Do not disassemble the optical pick up unit, since radiation from exposed laser diode is dangerous.
2. Do not adjust the variable resistor on the pickup unit. It was already adjusted.
3. Do not look at the focus lens using optical instruments.
4. Recommend not to look at pick up lens for a long time.

ACHTUNG: Dieses produkt enthält eine laserdiode. Im eingeschalteten zustand wird unsichtbare laserstrahlung von der lasereinheit abgestrahlt.

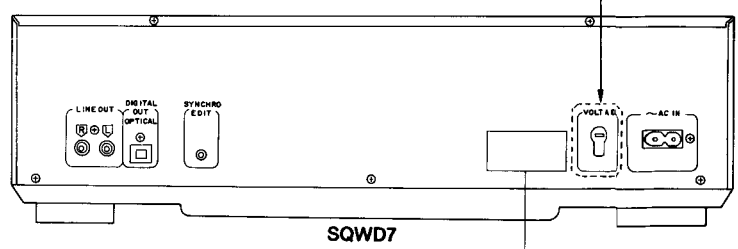
Wellenlänge: 780nm
Maximale strahlungsleistung der lasereinheit: 100μW/VDE

Die strahlung an der lasereinheit ist ungefährlich, wenn folgende punkte beachtet werden:

1. Die lasereinheit nicht zerlegen, da die strahlung an der freigelegten laserdiode gefährlich ist.
2. Den werksseitig justierten einstellregler der lasereinheit nicht verstellen.
3. Nicht mit optischen instrumenten in die fokussierlinse blicken.
4. Nicht über längere zeit in die fokussierlinse blicken.

ADVARSEL: I dette a apparat anvendes laser.

For [GC, PX] areas.



SQWD7

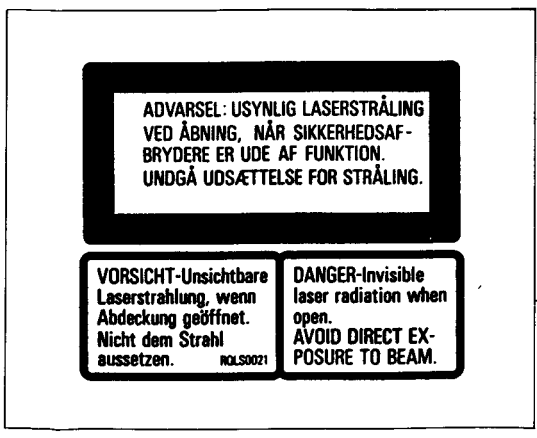
Obs:
Apparaten innehåller laser
Komponent av höger laserklass
än klass 1.

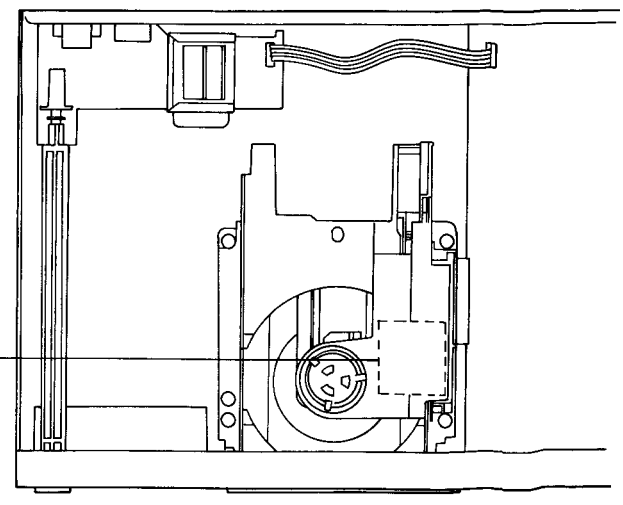
• Use of caution labels

Note: ○ Mark is used, × Mark is not used.

Areas	SQWD7	RQLS0021
(PX)	×	×
Others	○	○

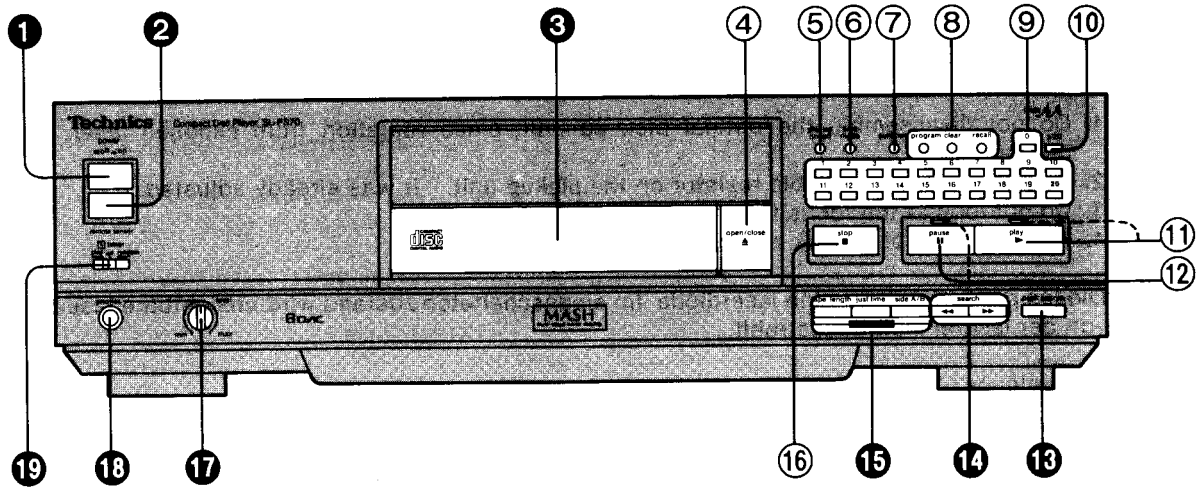
RQLS0021


ADVARSEL: USYNLIG LASERSTRÅLING VED ÅBNING, NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING.
VORSICHT-Unsichtbare Laserstrahlung, wenn Abdeckung geöffnet. Nicht dem Strahl aussetzen.
RQLS0021
DANGER-Invisible laser radiation when open. AVOID DIRECT EXPOSURE TO BEAM.



■ LOCATION OF CONTROLS

The functions indicated by the black numbers (with white background, ④ etc.) can also be activated using the remote control transmitter.



Control section

❶ Power switch (power ▙ off ▁ on)

❷ Remote control signal sensor (remote sensor)

❸ Disc holder

④ Disc holder open/close button (▲ open/close)

⑤ Display on/off button (display on/off)
Pressing this button enables the unit to delete the indicators on the display in two steps.

⑥ Time mode select button (time mode)

⑦ Auto cue button (auto cue)
Pressing this button enables the unit to stop at the beginning of every track and switch to the play standby mode.

⑧ Buttons for program function

•Program button (program)
Pressing this button initiates the programmed play mode. You can then enter specific tracks using the numeric buttons.

•Clear button (clear)
Each pressing this button makes one track cleared from the programmed sequence.

•Recall button (recall)
This button can be used to display the contents of the programmed track sequence for confirmation.

⑨ Numeric buttons (0~20)

⑩ Input mode button (>20)
Press this button and then the numeric buttons (0~9) to specify the track number 21 and up.

⑪ Play button and indicator (▶ play)

⑫ Pause button and indicator (❚❚ pause)

⑬ Peak level search button (peak search)
Pressing this button enables the unit to search for the "peak signal" locations in tracks on a disc so as to adjust the suitable recording level on the cassette deck.

⑭ Search buttons (◀◀ search ▶▶)
These buttons can be used to move rapidly forward or backward on the disc during play.

⑮ Buttons for edit function (synchro edit)

•Edit tape length button (tape length)
When compact discs are to be recorded to tape, this button can be used to calculate the number of tracks that can be recorded on each side of the tape, depending on the length of the casette tape used, so that as little tape as possible is wasted.

•Just time edit button (just time)
When recording compact discs to tape, this button can be used to edit the tracks on a disc so as to leave the least possible amount of blank space on the cassette tape.

•Tape-side select button (side A/B)
When recording compact discs to tape, this button can be used to check the number of tracks and amount of tape left over for side A or B.

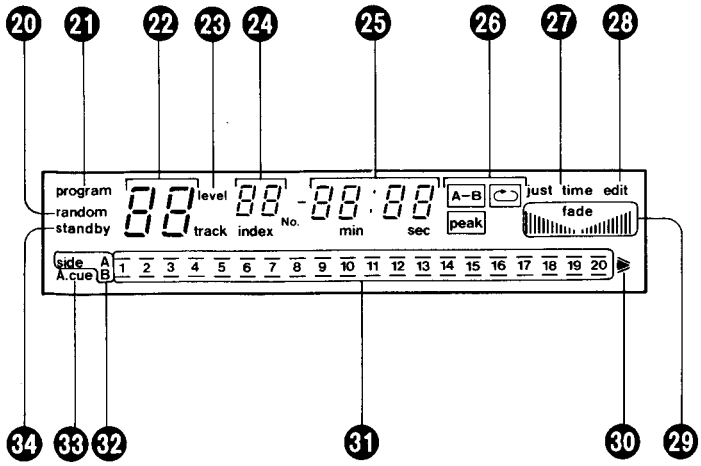
⑯ Stop button (■ stop)
This button can be used to stop disc play, as well as to cancel the various play modes.

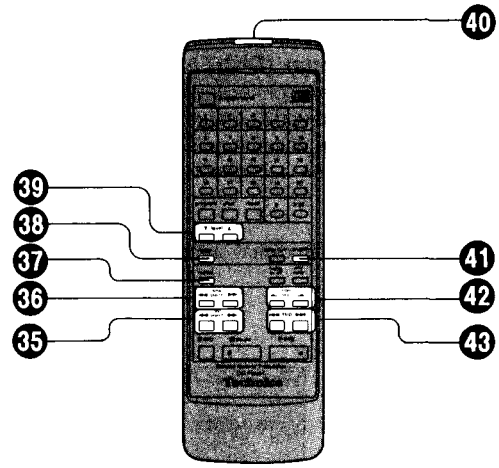
⑰ Headphones volume control (level)

> Avoid listening to music at high volume levels for extended periods of time.

⑱ Headphones jack (phones)

⑲ Timer switch (◷ timer)





Unnumbered buttons on the remote control transmitter function identically to their corresponding parts on the unit.

Indicators section

20 Random indicator (random)

21 Program indicator (program)

22 Track number display (track)

23 Level indicator (level)
This indicator lights when the output level is attenuated by the remote control.

24 Index/program number display (index/No.)

25 Time display (min/sec)

26 Operation indicators
The following indicators light during their respective operations.

A-B peak : Peak level search
: Repeat play

27 Just time edit indicator (just time)

28 Compact disc edit indicator (edit)

29 Fade in/fade out indicator (fade)

30 "Over" mark (▶)
This indicator lights if the total number of tracks on the disc is 21 or more.

31 Track number indicator (1–20)

32 Tape side indicator (side A/B)

33 Auto cue indicator (A. cue)

34 Standby indicator
This indicator lights when the display on/off button is pressed twice in the stop mode.

Remote control transmitter

35 Fast search buttons (◀◀ fast search ▶▶)
These buttons can be used to move forward or backward on the disc during play at high speed.

36 Slow search buttons (◀◀ slow search ▶▶)
These buttons can be used to move forward or backward on the disc during play at the same speed as thatby the search button on the unit itself.

37 Repeat button (repeat)

38 Fader button (fader)
Pressing this button in the pause mode initiates the fade in. Pressing this button during play initiates the fade out.

39 Level buttons (▼ level ▲)
These buttons can be used to control output level (from 0 dB to −12 dB).

40 Remote control signal transmission window

41 Random button (random)
This button can be used to play the tracks in a disc in a random sequence.

42 Index skip buttons (index skip)
These buttons are used to skip by index number (sub divisions within the current track).

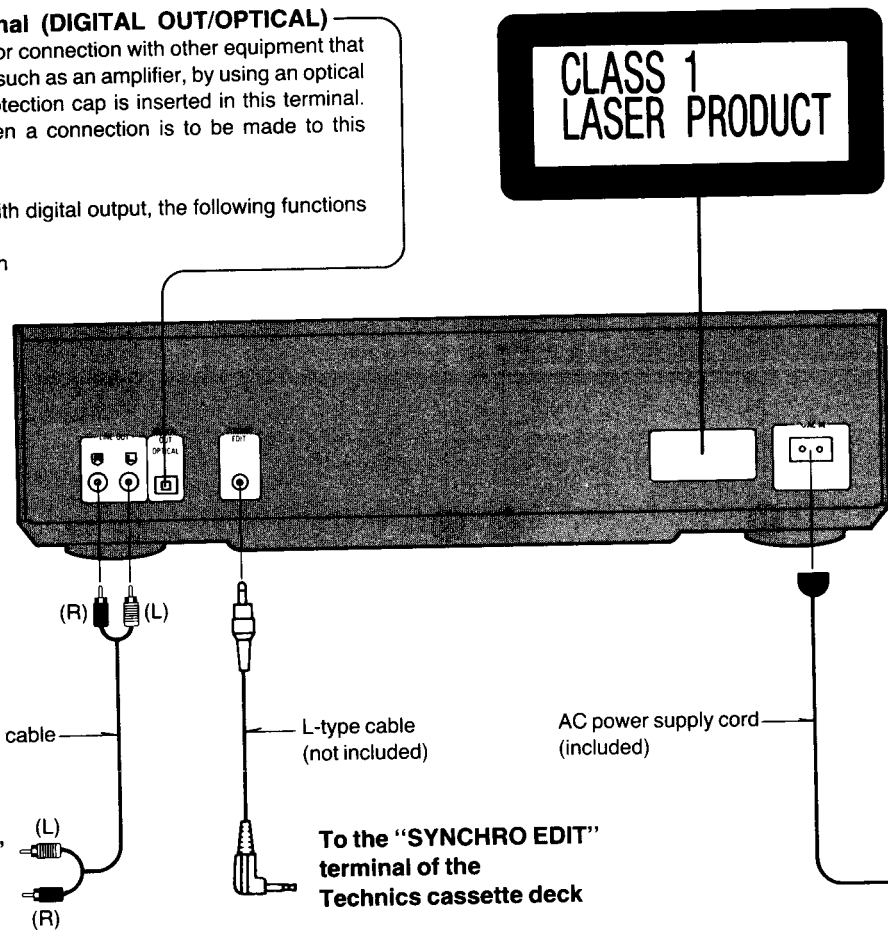
43 Skip buttons (◀◀ skip ▶▶)
These buttons are used to skip by track in the forward or reverse direction.

■ CONNECTIONS

Turn power off on all components before making connections.

•Optical output terminal (DIGITAL OUT/OPTICAL)
This terminal can be used for connection with other equipment that has a digital input terminal, such as an amplifier, by using an optical cable (optional). A dust-protection cap is inserted in this terminal. Remove this cap only when a connection is to be made to this terminal.

Note:
When the unit is working with digital output, the following functions do not work;
- •Fade in/fade out function
- •Output level adjustment



Note:
Be sure to connect the stereo connection cable with the amplifier when using the synchro edit function even if the optical cable has been connected.

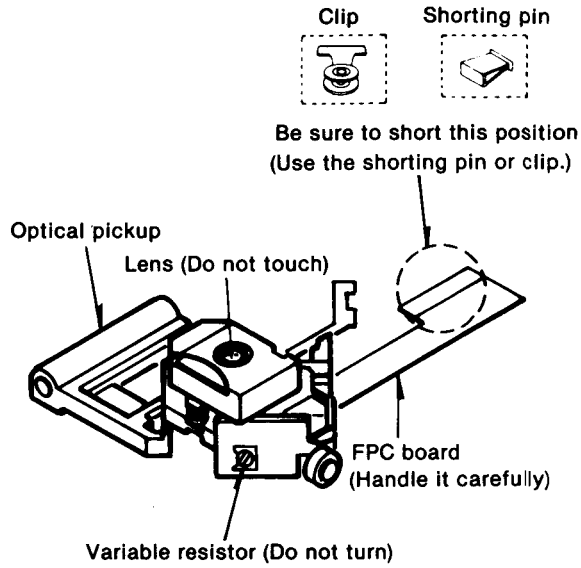
Note:
The configuration of the AC outlet and AC power supply cord differs according to area.

■ HANDLING PRECAUTIONS FOR OPTICAL PICKUP

The laser diode in the optical pickup may break down due to potential difference caused by static electricity of clothes or human body.
So, be careful of electrostatic breakdown during repair of the optical pickup.

• Handling of optical pickup

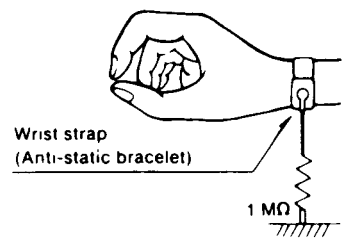
1. Do not give excessive shock to the optical pickup because it is of extremely precise structure.
2. To prevent the breakdown of the laser diode, an anti-static shorting pin is inserted into the flexible board. (FPC board)
   When removing or connecting the short pin, finish the job in as short time as possible.
3. Take care not to apply excessive stress to the flexible board. (FPC board)
4. Do not turn the variable resistor (laser power adjustment). It has already been adjusted.

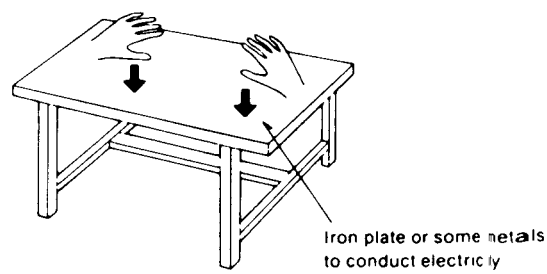


• Grounding for electrostatic breakdown prevention

1. Human body grounding
   Use the anti-static wrist strap to relieve the static electricity from your body.
2. Work table grounding
   Put a conductive material (sheet) or steel sheet on the area where the optical pickup is placed, and ground the sheet.

Caution:
The static electricity of your clothes will not be grounded through the wrist strap. So, take care not to let your clothes touch the optical pickup.



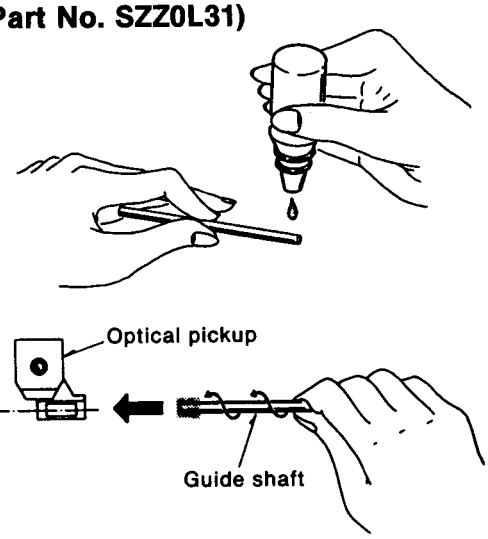


■ INSTRUCTIONS FOR TRAVERSE OIL (Part No. SZZ0L31)

The container contains 6g (approx. 3ml) of oil. Since one application (one shaft) uses 0.05ml of oil.

How to Use

(1) Remove the guide shaft in the traverse deck from the optical pickup and clean off any dust from the guide shaft.
(2) Apply one drop of the SZZ0L31 to the tip of the guide shaft.
(3) Hold the guide shaft so that its oiled end touches the optical pickup and insert it into the bearing while rotating it slowly.
(4) After securing the guide shaft, move the optical pickup by hand several times to the left and right to distribute the oil on the guide shaft.



■ DISASSEMBLY INSTRUCTIONS

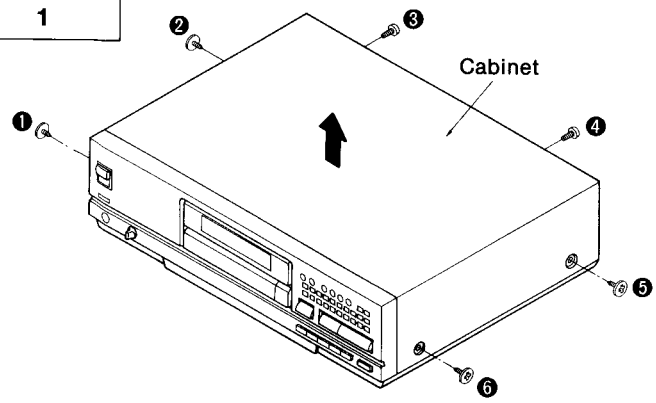
Warning: This product uses a laser diode. Refer to caution statements on page 3.

ACHTUNG: • Die lasereinheit nicht zerlegen.
• Die lasereinheit darf nur gegen eine vom hersteller spezifizierte einheit ausgetauscht werden.

*** This CD player is equipped with FPC board so handle them with care during disassembly and reassembly.**

Ref. No. 1 — **Removal of the cabinet**

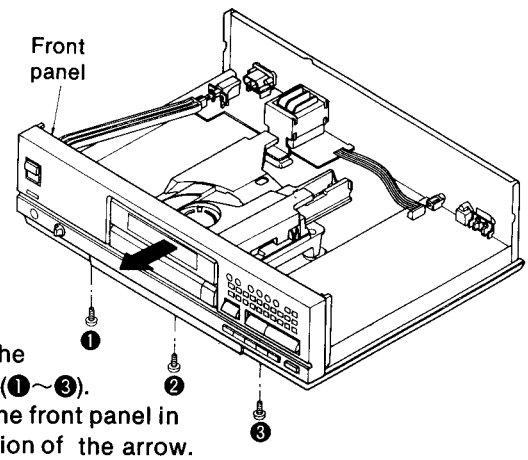
Procedure 1



• Remove the 6 screws (❶~❻).

Ref. No. 2 — **Removal of the front panel**

Procedure 1→2



1. Remove the 3 screws (❶~❸).
2. Remove the front panel in the direction of the arrow.

Ref. No. 3 — **Removal of the FL drive P.C.B. and timer/remote control sensor P.C.B.**

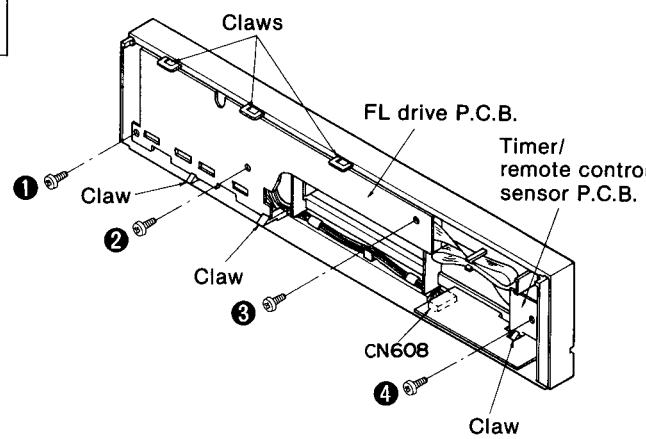
Procedure 1→2→3

■ Removal of the FL drive P.C.B.

1. Remove the 1 connector (CN608).
2. Remove the 3 screws (❶~❸).
3. Remove the 5 claws.

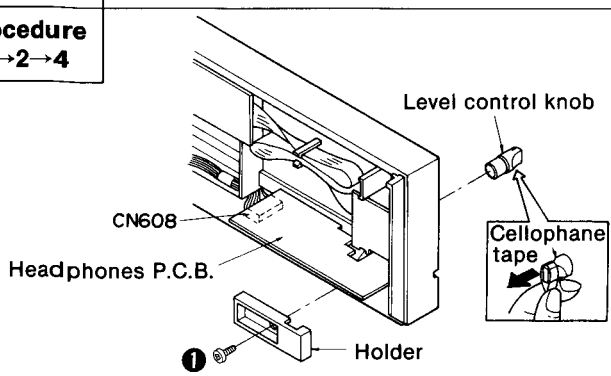
■ Removal of the timer/remote control sensor P.C.B.

1. Remove the 1 screw (❹).
2. Remove the 1 claw.



Ref. No. 4 — **Removal of the headphones P.C.B.**

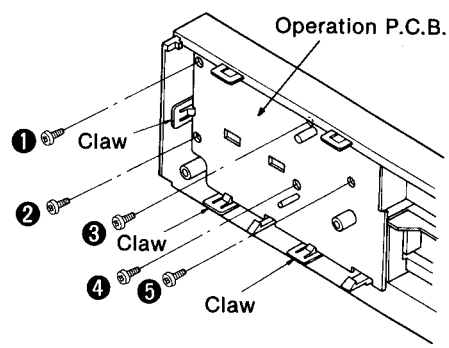
Procedure 1→2→4



1. Pull out the level control knob.
2. Remove the 1 connector (CN608).
3. Remove the 1 screw (❶).
4. Remove the holder.

Ref. No. 5 — **Removal of the operation P.C.B.**

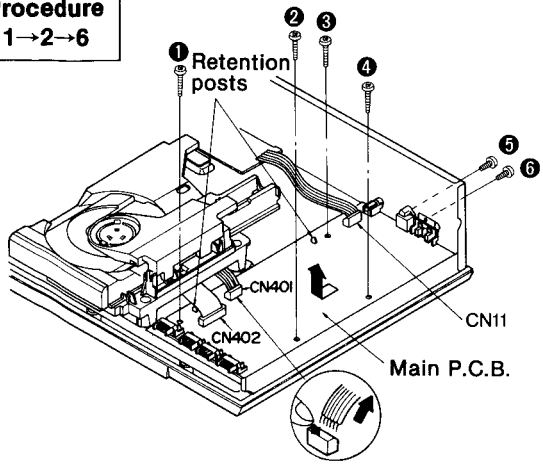
Procedure 1→2→3→5



1. Remove the 5 screws (❶~❺).
2. Remove the 3 claws.

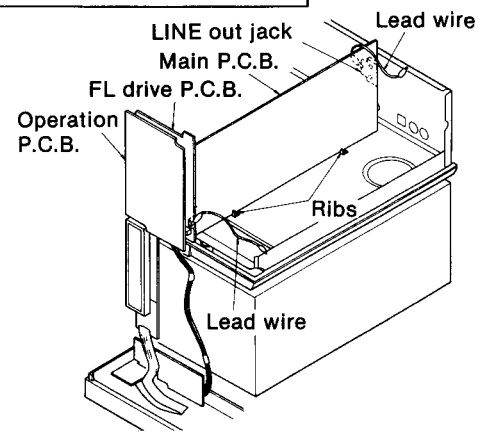
Ref. No. 6 **Removal of the main P.C.B.**

Procedure 1→2→6



1. Remove the 3 flat cable (CN11, CN401, CN402).
2. Remove the 6 screws (❶~❻).
3. Lift the main P.C.B. off the retention posts on the chassis.
4. Remove the main P.C.B. in the direction of the arrow.

How to check the main P.C.B.

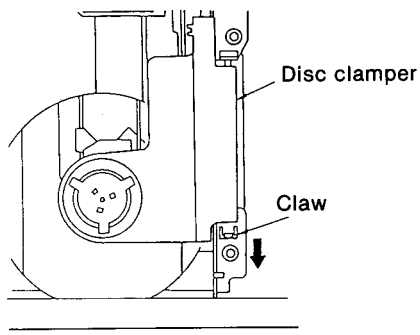


- When checking the soldered surface of the main P.C.B. and replacing the parts, do as shown.
- Don't remove the 3 flat cables (CN11, CN401, CN402).

1. Connect the main P.C.B. ground terminal (LINE OUT terminal) to the chassis with a lead wire.
2. Connect the FL drive P.C.B. ground terminal to the chassis with a lead wire.

Ref. No. 7 **Removal of the disc clamper**

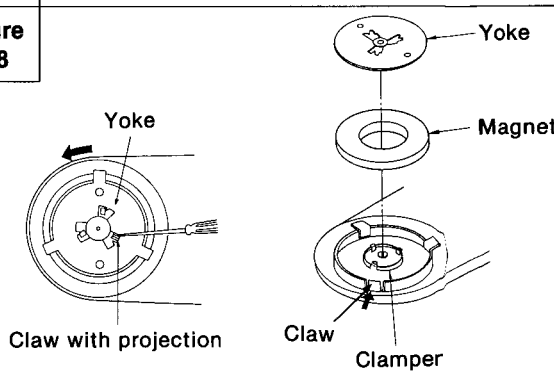
Procedure 1→7



- Push the claw in the direction of the arrow and remove the disc clamper.

Ref. No. 8 **Removal of the magnet and clamper**

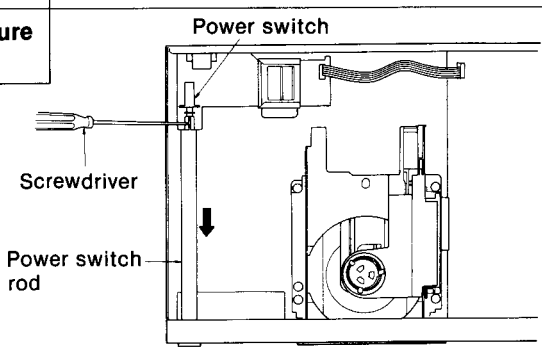
Procedure 1→7→8



1. While lifting the claw with a screwdriver, rotate clamper in the direction of the arrow and remove the yoke and magnet.
2. Release the claw of the clamper.

Ref. No. 9 **Removal of the power switch rod**

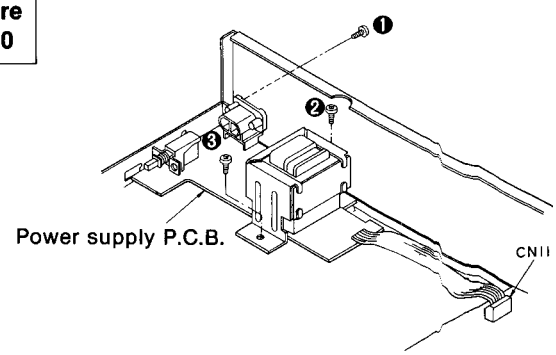
Procedure 1→9



1. Set the power switch in the "OFF" position.
2. Remove the power switch rod by using a screwdriver.

Ref. No. 10 **Removal of the power supply P.C.B.**

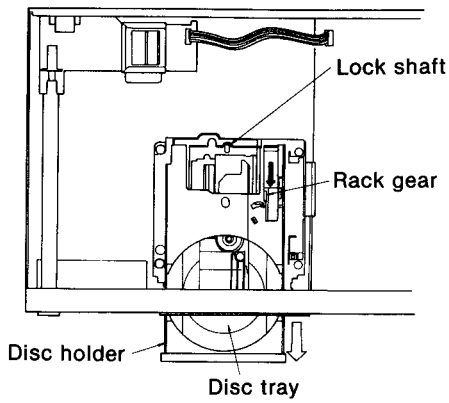
Procedure 1→9→10



1. Remove the 3 screws (❶~❸).
2. Remove the 1 connector (CN11).

Ref. No. 11 **Removal of the disc holder**

Procedure 1→7→11

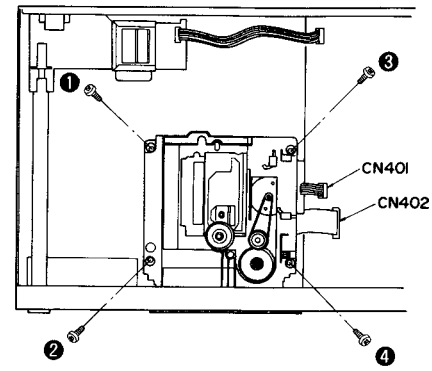


1. Push the rack gear slowly in the direction of the arrow until the disc tray comes up.
2. Pull out slowly the disc holder.

Note: Make sure to release the lock shaft.

Ref. No. 12 **Removal of the loading base**

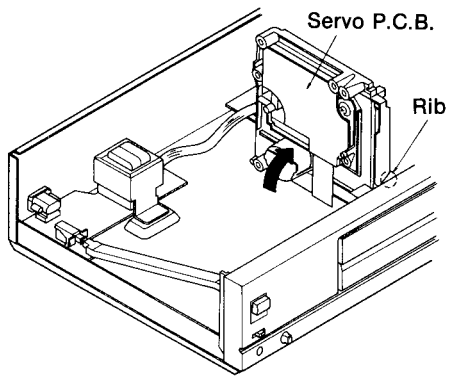
Procedure 1→7→11→12



1. Remove the 4 screws (❶~❹).
2. Remove the 2 flat cables (CN401, CN402).

Ref. No. 13 **How to check the servo P.C.B.**

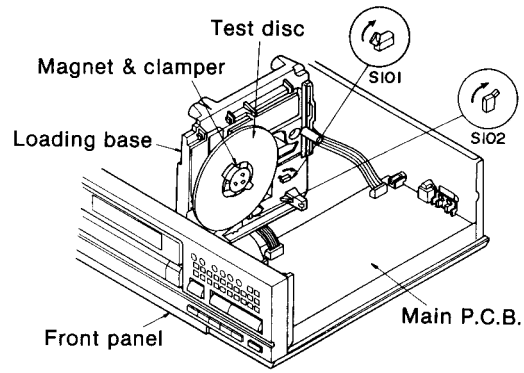
Procedure 1→7→11→12→13



- When checking the soldered surface of the servo P.C.B. and replacing the parts, do as shown.
- Don't remove the 2 flat cables (CN401, CN402).

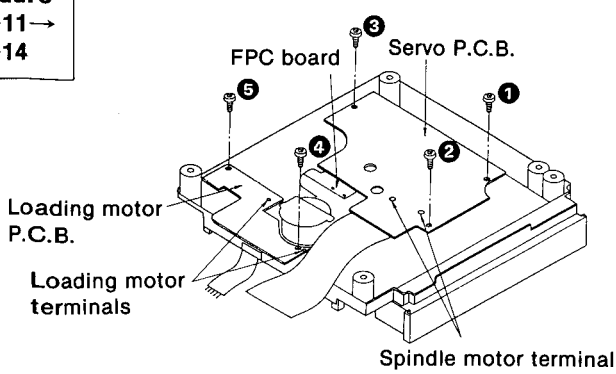
How to play the disc

1. Place the test disc and magnet on the turntable.
2. Switch the player ON.
3. First push the open/close switch (S102) and next, push the S101.
4. After the test disc starts rotating, release the open/close switches (S101, S102).



Ref. No. 14 **Removal of the servo P.C.B. and loading motor P.C.B.**

Procedure 1→7→11→12→14



• Removal of the servo P.C.B.

1. Remove the 3 screws (❶~❸).
2. Unsolder the 2 terminals of spindle motor.
3. Remove the FPC board from the optical pickup.

Caution:

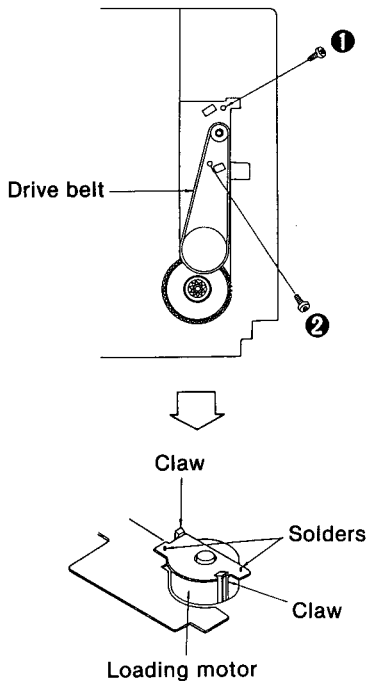
To prevent the breakdown of the laser diode, antistatic shorting pin is inserted into the FPC board.

• Removal of the loading motor P.C.B.

1. Remove the 2 screws (❹, ❺).
2. Unsolder the 2 terminals of loading motor.

Ref. No. 15	Removal of the loading motor

Procedure
1→7→11→12→15



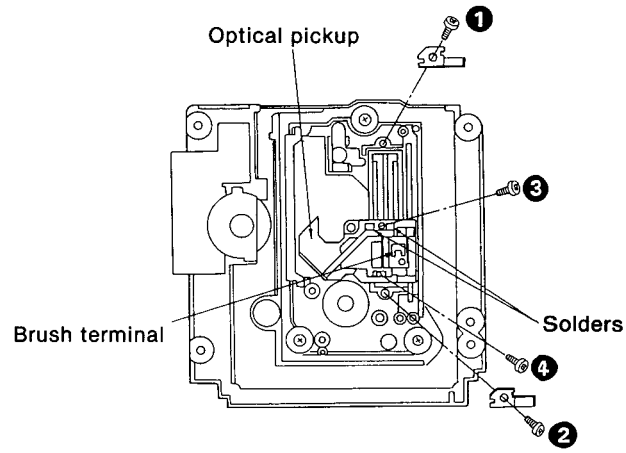
1. Remove the drive belt.
2. Remove the 2 screws (❶, ❷).
3. Release the 2 claws.
4. Unsolder the 2 terminals of the lead wire of the loading motor.

Ref. No. 16	Removal of the optical pickup

Procedure
1→7→11→12→14→16

Refer to the handling precautions for optical pickup and instructions for traverse oil (See page 7).

1. Remove the 2 screws (❶, ❷).
2. Unsolder the 2 terminals and the 2 screws (❸, ❹).



Caution: Take care not to touch the brush terminal.

Ref. No. 17	Removal of the spindle motor

Procedure
1→6→8→9→11→17

1. Loosen the screw (❶) by using a 1.27mm allen wrench and remove the turntable.
2. Remove the 2 screws (❷, ❸).

Caution:

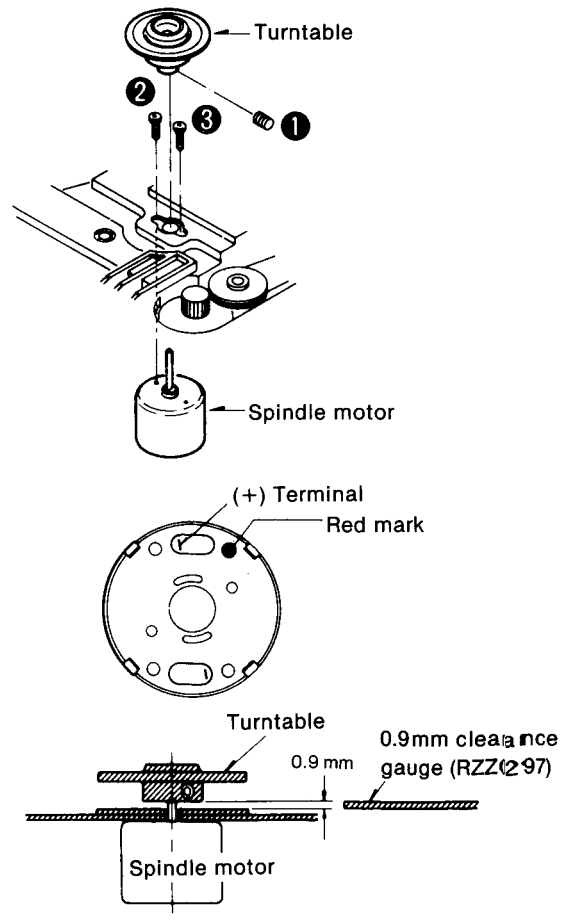
1. Turntable height adjustment is necessary any time the turntable or spindle motor is replaced.
2. The (+) terminal of the spindle motor is indicated by the red mark.

Adjustment of turntable height

1. Insert a 0.9mm clearance gauge (RZZ0297) between the turntable and loading base as shown right.
2. Tighten the turntable set-screw by using a 1.27mm allen wrench.

Caution:

Refer to turntable height adjustment (see page 13).



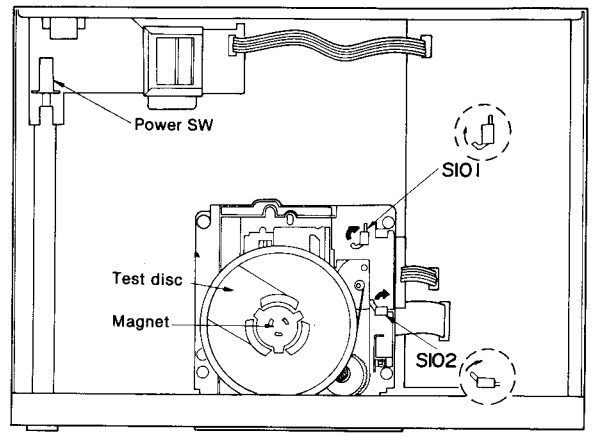
■ MEASUREMENTS AND ADJUSTMENTS

Caution:

- It is very dangerous to look at or touch the laser beam. (Laser radiation is invisible.) With the unit turned "on", laser radiation is emitted from the pickup lens. Avoid exposure to the laser beam, especially when performing adjustments.

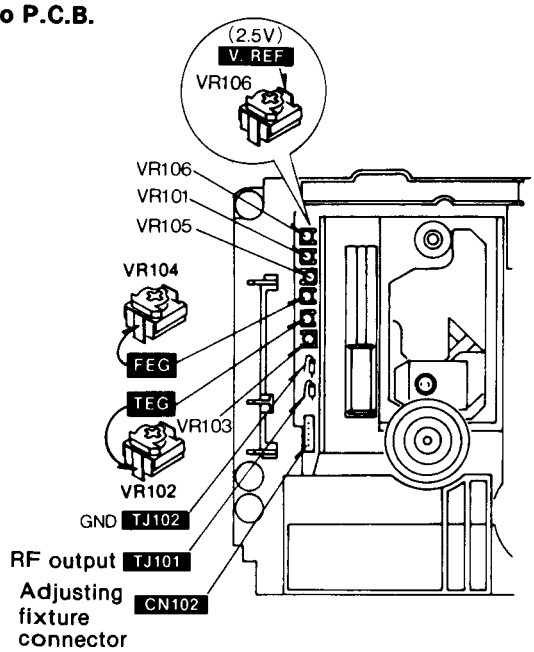
PREPARATION

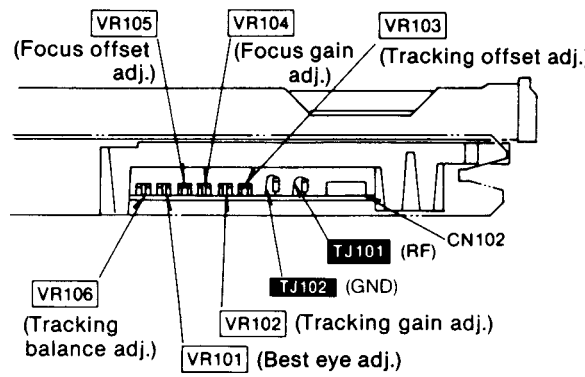
1. Remove the cabinet (see Ref. No. 1 of the disassembly instructions).
2. Remove the disc clamper and magnet (see Ref. No. 7, 8 of the same).
3. Remove the disc holder and power switch rod (see Ref. No. 9, 11 of the same).
4. Place the test disc and magnet on the turntable.
5. Switch the player on.
6. First push the Open/Close switch S102 in the direction of the arrow and then, push switch S101 in the direction of the arrow as shown in the figure.



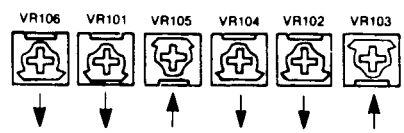
ADJUSTMENT POINTS

• Servo P.C.B.





• Temporary setting of each VR



(Temporary VR setting if any of the trimmer VRs are replaced or require readjustment, temporarily set them to the following positions.)

Measuring Instruments and Special Tools

* Servo gain adjuster (SZZP1017F or SZZP1094C-1)
* Test discs
1. Playability test disc (SZZP1054C or SZZP1014F)
2. Uneven test disc (SZZP1056C)
3. Black band test disc (SZZP1057C)
* Normal disc
* Dual-beam oscilloscope with bandwidth of 30 MHz or better (with EXT trigger and 1 : 1 probe).
* Audio frequency (AF) osillator
* Comversion connector (SZZP1032F)
* Allen wrench (M2.0) (SZZP1101C)
* Allen wrench (M1.27)
* 0.9mm clearance gauge (RZZ0297)
* Filter

Perform adjustments depend on the part to be replaced according to followings:

(1) Spindle motor ..... Items (1), (3) to (8)
(2) Turntable ..... Items (1), (3) to (8)
(3) Optical pickup ..... Items (2) to (8)

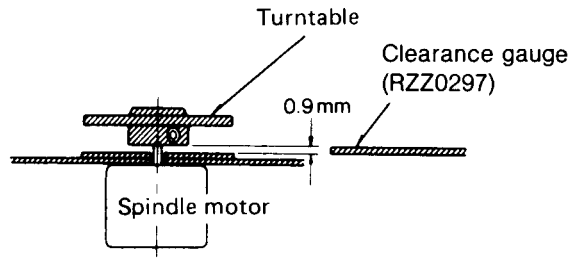
Adjusting Procedure

* If you have replaced the optical pickup, spindle motor, or turntable, do the following adjustment:

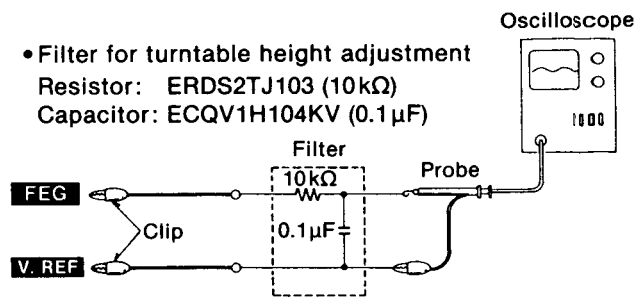
(1) TURNTABLE HEIGHT ADJUSTMENT

1. Insert the 0.9 mm clearance gauge (RZZ0297) between the turntable and the loading base (see the figure at right).
2. Tighten the turntable retention screw with the 1.27 mm allen wrench.
3. Connect the oscilloscope's CH. 1 probe across VR104's **FEG** (+) and VR106's **V. REF** (−) **terminals via a filter.**
   (Note: A voltage of 2.5V appears at the V. REF terminal. Take care not to short the player's chassis to the oscilloscope ground.)
   Oscilloscope setting: VOLT ..... 50 mV
   SWEEP ..... 1 ms.
   Input coupling ... DC
4. Adjust oscilloscope's DC zero balance.
5. Switch the player power **ON**, and play the test disc (SZZP1014F or SZZP1054C).
6. Measure the voltage amplitude of the signal on the oscilloscope.

Note 1. If the measured amplitude is within a range of +/− 15 mV, the turntable height is correct. If it is outside this range, adjust the turntable height by using the clearance gauge as a pry.
If the amplitude exceeds +15 mV, lower turntable.
If the amplitude is below −15 mV, elevate the turntable.

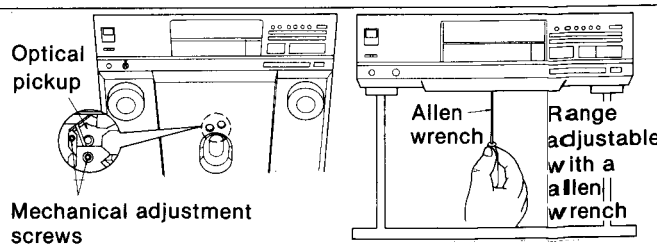


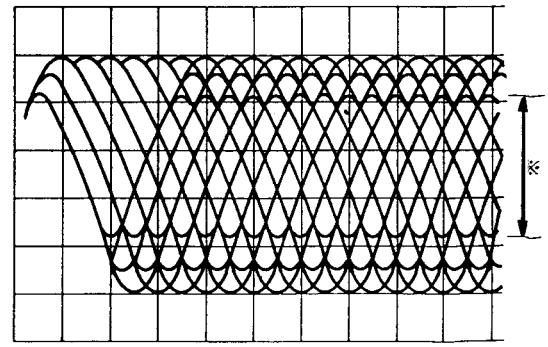
Note 2. If the measured amplitude greatly surpasses or falls short of the range above, set **VR105** at or around the center, then try to adjust the height again. (Then be sure to adjust the focus offset as well.)



(2) MECHANICAL ADJUSTMENT

1. Connect the oscilloscope's CH. 1 probe across **TJ101** (+) and **TJ102** (−) on the Servo P.C.B.
   Oscilloscope setting: VOLT ..... 100 mV
   SWEEP ..... 0.5 μs.
   Input coupling ... AC
2. Switch the player power **ON**, and play track **9** on the test disc (SZZP1056C). (Playing any other track may yield a false adjustment.)
3. Leave the player in Play mode, and place it as shown in the figure on the right.
4. Alternately adjust the two mechanical adjusting screws with the 2.0mm allen wrench (SZZP1101C) until the vertical fluctuation of RF signal is minimized and the eye pattern is most stretched.
5. After completing the adjustment, lock the **mechanical adjustments** with lock paint (RZZOL01).

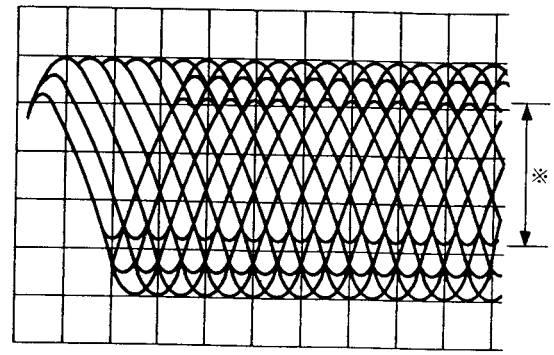




※ Most stretched eye pattern.

(3) BEST EYE (PD BALANCE) ADJUSTMENT

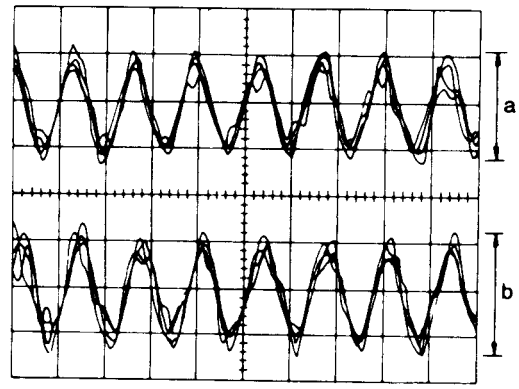
1. Connect the oscilloscope's CH. 1 probe across **TJ101** (+) and **TJ102** (−) on the Servo P.C.B.
   Oscilloscope setting: VOLT . . . . . 100 mV
   SWEEP . . . . . 0.5 μ s
   Input coupling . . . AC
2. **Switch the player power ON, and play the 1kHz (track 1) on the test disc (SZZP1054C).**
3. **Adjust VR101 until the vertical fluctuation of RF signal is minimized and the eye pattern is most stretched.**



※ Most stretched eye pattern.

(4) FOCUS GAIN ADJUSTMENT

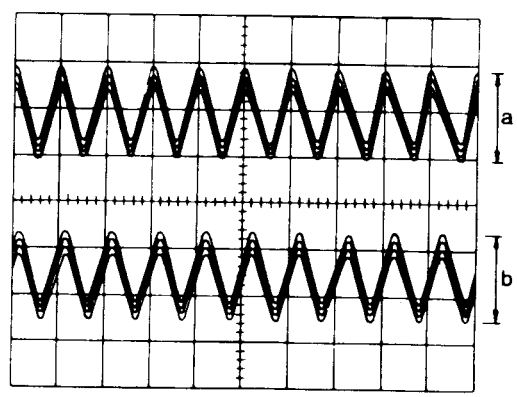
1. Connect the servo gain adjuster to the player (see page 15).
2. Set the servo gain adjuster's gain switch to position "2" and the ON/OFF switch to **ON**.
3. Set up the AF oscillator output for **825Hz, 150 mVp-p**, and connect it across the OSC and GND terminals on the servo gain adjuster.
4. Connect oscilloscope's CH. 1 and CH. 2 probes to the servo gain adjuster's TP1 and TP2 terminals, respectively (TP3 is GND).
   Oscilloscope setting: VOLT . . . . . 100 mV
   (both channels)
   SWEEP . . . . . 0.2 ms.
   Input coupling . . . AC
5. Play the test disc (SZZP1014F or SZZP1054C).
6. Set the servo gain adjuster's gain switch to position "3", and you will see a 825 Hz signal on the oscilloscope. Adjust **VR104** until the signal amplitudes on both channels become identical to each other.
7. Set the gain switch back to position "2".



※ Adjust **VR104** until a equals b.

(5) TRACKING GAIN ADJUSTMENT

1. Set up the AF oscillator output for **1.1 kHz, 150 mVp-p**, and connect it across the OSC and GND terminals on the servo gain adjuster.
2. Connect oscilloscope's CH. 1 and CH. 2 probes to the servo gain adjuster's TP1 and TP2 terminals, respectively (TP3 is GND).
   Oscilloscope setting: VOLT . . . . . 100 mV
   (both channels)
   SWEEP . . . . . 0.2 ms.
   Input coupling . . . AC
3. Switch the player power **ON**, and play the test disc (SZZP1014F or SZZP1054C).
4. Set the servo gain adjuster's gain switch to position "1", and you will see a 1.1 kHz signal on the oscilloscope. Adjust **VR102** until the signal amplitudes on both channels become identical to each other.
5. Set the gain switch back to position "2".

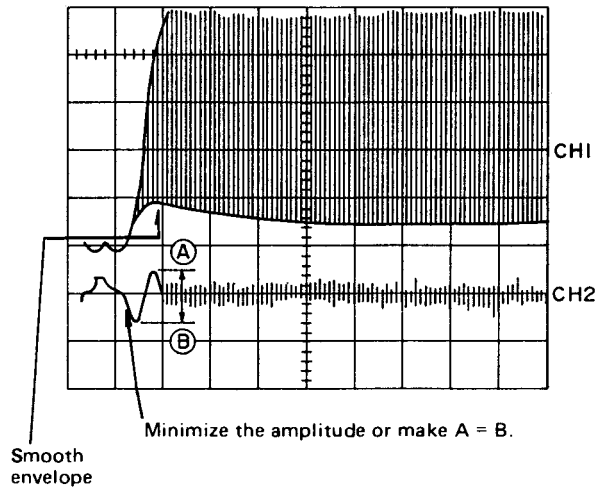


※ Adjust **VR102** until a equals b.

(6) FOCUS OFFSET ADJUSTMENT

Note: Make sure that the servo gain adjuster's gain switch is set to position **"2"**.

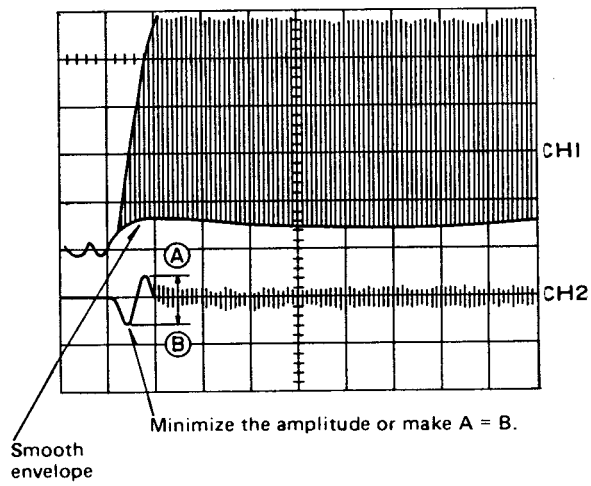
1. Connect the oscilloscope's CH. 1 probe across **TJ101** (+) and **TJ102** (−) on the Servo P.C.B. and its CH. 2 probe (+) to VR104's **FEG** terminal.
   Oscilloscope setting: VOLT. . . . . .100 mV (CH. 1)
   100 mV (CH. 2)
   SWEEP. . . . . .0.2 ms.
   Input coupling. . . AC (both CH. 1 and 2)
   Trigger mode . . . .NORM (trigger CH. 1.)
2. Switch the player power **ON**, and play track **9** on the test disc (SZZP1057C).
3. Trigger the oscilloscope's CH. 1 so that the following waveforms are observed. Adjust **VR105** until the dip in the RF signal envelope on CH. 1 is smooth and the signal amplitude on CH. 2 is minimized, i.e. when amplitude A equals amplitude B.



(7) TRACKING OFFSET ADJUSTMENT

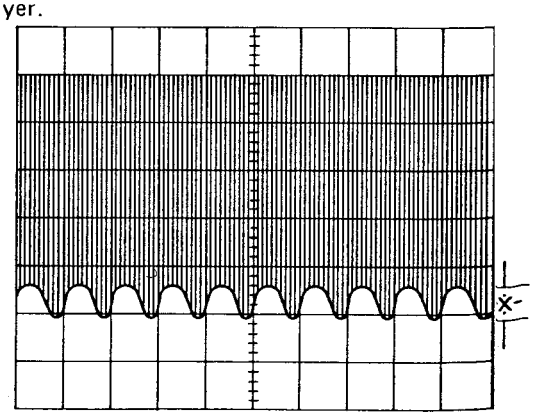
Note: Make sure that the servo gain adjuster's gain switch is set to position **"2"**.

1. Connect the oscilloscope's CH. 1 probe across **TJ101** (+) and **TJ102** (−) on the Servo P.C.B., and its CH. 2 probe (+) to VR102's **TEG** terminal.
   Oscilloscope setting: VOLT. . . . . .100 mV (CH. 1)
   100 mV (CH. 2)
   SWEEP. . . . . .0.2 ms.
   Input coupling. . AC (both CH. 1 and 2)
   Trigger mode. . . NORM (trigger CH. 1.)
2. Switch the player power **ON**, and play track **9** on the test disc (SZZP1057C).
3. Trigger the oscilloscope's CH. 1 so that the following waveforms are observed. Adjust **VR103** until the dip in the RF signal envelope on CH. 1 is smooth and the signal amplitude on CH. 2 is minimized, i.e. when amplitude A equals amplitude B.



(8) TRACKING BALANCE ADJUSTMENT

1. Make sure that the servo gain adjuster's gain switch is set to position **"2"**.
2. Set up the AF oscillator output for **1.1 kHz, 600 mVp-p**, and connect it across the OSC and GND terminals on the servo gain adjuster.
3. Connect the oscilloscope's CH. 1 probe across **TJ101** (+) and **TJ102** (−) on the Servo P.C.B. and CH. 2 probe (+) to the OSC terminal on the servo gain adjuster.
   Oscilloscope setting: VOLT. . . . . .100 mV (CH. 1)
   200 mV (CH. 2)
   SWEEP. . . . . .0.1 ms.
   Input coupling. .AC (both CH. 1 and 2)
   Trigger mode . . .NORM (trigger CH. 2)
4. Switch the player power **ON**, and play the test disc (SZZP1014F or SZZP1054C).
5. Set the servo gain adjuster's gain switch to position **"1"**, and adjust **VR106** so that the wafveformof the output section marked with ※ is balanced.
6. Disconnect the servo gain adjuster's leads from the player.



※ This section of the waveform must be balanced.

(9) CHECK OF PLAY OPERATION AFTER ADJUSTMENT

* **Checking Skip Search**

1. Play an ordinary musical program disc.
2. Press the skip button to check for normal skip search operation (in both the forward and reverse directions).

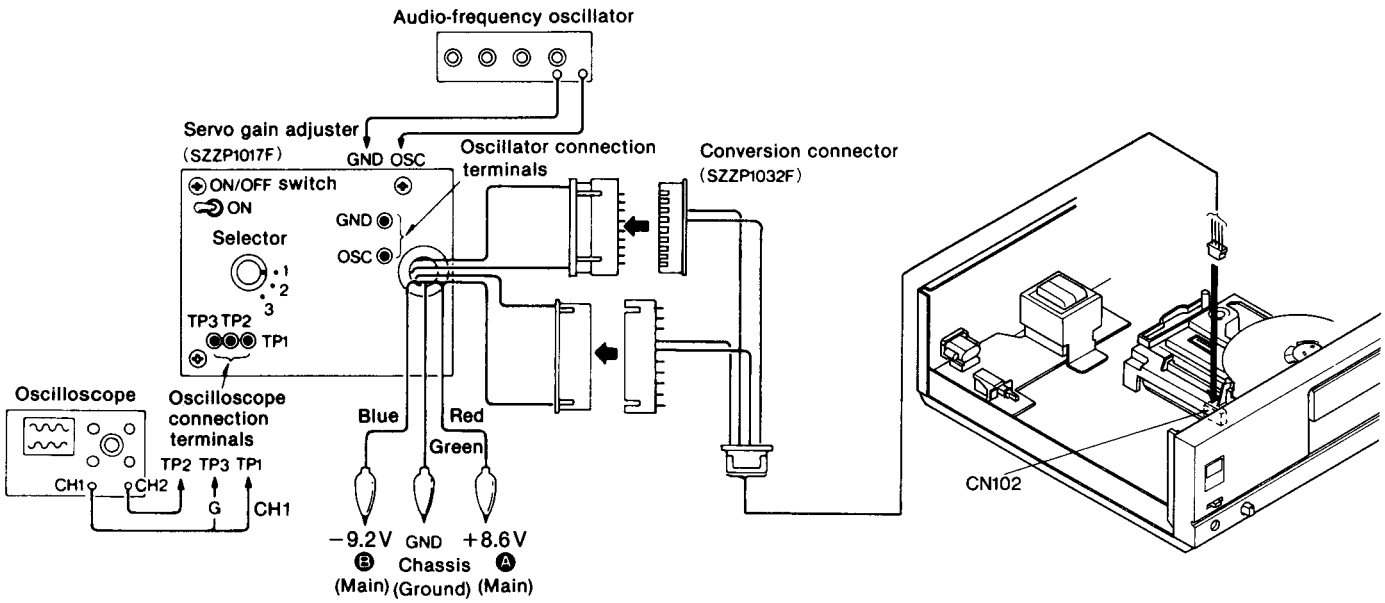
* **Checking Manual Search**

1. Play an ordinary musical program disc.
2. Press the manual search button to check for smooth manual search operations at either low or high speed (in both the forward and reverse directions).

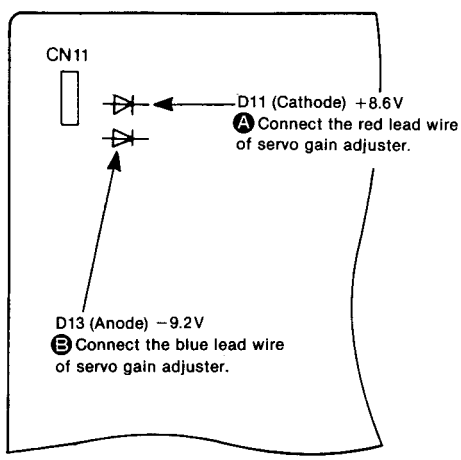
* **Checking Using Defect Disc**

1. Play the 0.7 mm black dot and the 0.7 mm wedge on the defect test disc (SZZP1054C) and verify that no sound skip or noise occurs.
2. Play the middle tracks of the uneven test disc and verify that no sound skip or noise occurs.

• Connection of servo gain adjuster



• Main P.C.B.


CN11
D11 (Cathode) +8.6V
Ⓐ Connect the red lead wire of servo gain adjuster.
D13 (Anode) −9.2V
Ⓑ Connect the blue lead wire of servo gain adjuster.

■ NEW SERVO GAIN ADJUSTER (Servo Amp. Adjusting Fixture)

The following introduces the improved version of the current servo gain adjuster (SZZP1017F):

Part number: SZZP1094C-1

Features:

(1) Contains all oscillation frequencies and output adjustments needed for focus servo gain, tracking servo gain, and tracking balance adjustment (requires no external oscillator).
(2) Panel indicators indicate the best points of focus and tracking servo gains (no oscilloscope needed).
(3) Internal power supply eliminates the need for power supply from the CD player.

■ TERMINAL FUNCTION OF IC'S

• IC101 (AN8373S): Servo amp.

Pin No.	Mark	I/O Division	Function
1	AMP1	I	RF signal input (X30 amp.)
2	PDAD	I	Photo detector current input (A2)
3	PDA	I	Photo detector current input (A1)
4	PDBD	I	Photo detector current input (A4)
5	PDB	I	Photo detector current input (A3)
6	LPD	I	Non-inverting laser power input
7	LD	O	Laser power auto control output
8	FBL1	I	PD balance adjustment
9	FBL2	I	
10	TBL1	I	Tracking balance adjustment
11	TBL2	I	
12	FOOFS	I	Focus offset adjustment
13	IVA	O	Current/voltage conversion output (A)
14	IVB	O	Current/voltage conversion output (B)
15	FE	O	Focus gain adjustment output
16	FPI	I	Focus error signal input
17	TPI	I	Tracking error signal input
18	C. TPL	I	Tracking error filter capacitor input
19	C. TPH		
20	C. FPL	I	Focus error filter capacitor input
21	C. FPH		

Pin No.	Mark	I/O Division	Function
22	TPO	O	Tracking error signal output
23	FPO	O	Focus error signal output
24	FGC	I	Focus gain up signal input (Not used, connected to GND)
25	TGC	I	Tracking gain up signal input (Not used, connected to GND)
26	GD	I	Focus/Tracking down signal input (Not used, connected to GND)
27	PTO	O	Position detecting amp. output
28	PTI	I	Position detecting amp. input
29	PBO	O	Position detecting buffer output
30	POT	I	Position detecting buffer input
31	BDO	O	Dropout detection output
32	$\overline{\text{RFDET}}$	O	RF detection signal output
33	SDO	O	Dropout detection pulse output
34	C. SBDO	I	Dropout detecting capacitor input
35	ARF	O	RF signal output
36	C. AGC	I	AGC detecting capacitor input
37	VCC	I	Power supply terminal
38	LDON	I	Laser power control input
39	RF IN	I	RF signal input
40	AMPO	O	RF signal output
41	VREF	O	Reference voltage output
42	GND	—	Ground terminal

• IC102 (AN8374S): Servo processor

Pin No.	Mark	I/O Division	Function
1	LSA	I	Phase difference input (A)
2	LSB	I	Phase difference input (B)
3	TEOFS	O	Tracking offset adjustment
4	TE	O	Tracking gain adjustment
5	TEG	I	
6	TE OUT	O	Tracking error signal output
7	TE BPF	I	Tracking error gain detecting filter (Not used, open)
8	FEG	I	Focus gain adjustment
9	FE OUT	O	Focus error signal output
10	CLW	O	Triangular wave oscillator capacitor output
11	VREF	I	Reference voltage input
12	ARF	I	RF signal input
13	CDSL	I	Data slice filter capacitor input
14	FPC	I	Frequency difference signal input
15	GND	—	Ground terminal
16	C. PLL	I	PLL loop filter constant
17	VSS	—	Ground terminal
18	CLK	I	Frequency pull-in clock signal (88.2 kHz) input
19	SRF	O	Sliced and digitized RF signal output
20	PCK	O	Clock output extracted from SRF
21	EFM	O	EFM signal output synchronous with PCK

Pin No.	Mark	I/O Division	Function
22	VDD	I	Power supply terminal
23	SPCNT	O	Track crossing speed control output output (Not used, open)
24	SENSE	O	Selector output (track crossing state)
25	TRV	O	Traverse servo control output
26	$\overline{\text{FLOCK}}$	O	Focus lock signal output
27	KICK	O	Track kick signal output
28	LDON	O	Laser power control output
29	VDET	O	Focus/tracking gain up output (Not used, open)
30	CNT1	I	Control input (FOON: Focus Servo On signal)
31	CNT2	I	Control input (TRON: Tracking Servo On signal)
32	CNT3	I	Control input (KICKF: Kick Direction (Forward) command)
33	CNT4	I	Control input (KICKR: KICK Direction (Backward) command)
34	TRVF	I	Traverse forward command signal
35	TRVR	I	Traverse backward command signal
36	$\overline{\text{RFDET}}$	I	RF detection signal input
37	BDO	I	Dropout detection input
38	VCC	I	Power supply terminal
39	TVPO	O	Traverse position detecting resistor/capacitor inputs
40	TVPI	I	
41	BROUT	O	Tracking drive control output
42	BRIN	I	Tracking error signal input

• IC103 (AN3877N): BTL drive

Pin No.	Mark	I/O Division	Function
1	PVCC	I	Drive power supply
2	VCC	I	Power supply terminal
3	TB	O	External transistor base driving output
4	VMON	O	Voltage output
5	TVDI	I	Traverse error signal input
6	FDI	I	Focus error signal input
7	TDI	I	Tracking error signal input
8	VREF	I	Reference voltage input

Pin No.	Mark	I/O Division	Function
9	TD−	O	Inverting output of tracking driver
10	TD+	O	Non-inverting output of tracking driver
11	FD−	O	Inverting output of focus driver
12	FD+	O	Non-inverting output of focus driver
13	TVD−	O	Inverting output of traverse driver
14	TVD+	O	Non-inverting output of traverse driver
15	$\overline{\text{RESET}}$	O	Reset signal output
16	PC	I	PC input (connect to GND.)

• IC301 (MN6625): Digital signal processor

Pin No.	Mark	I/O Division	Function
1	BYTCK	O	Serial data byte clock (Not used, open)
2	FCLK	O	Crystal frame clock (7.35kHz) (Not used, open)
3	DEMPH	O	De-emphasis ON signal (de-emphasis ON at "H")
4	SRDATA	O	Serial data output (MSB first)
5	SCK	O	Serial bit clock output
6	LRCK	O	LR discrimination signal output
7	WDCK	O	Serial data output word clock
8	LDG	O	L channel deglitch signal (Not used, open)
9	RDG	O	R channel deglitch signal (Not used, open)
10	IPFLAG	O	Interpolation flag (interpolation at "H")
11	FLAG	O	Error flag terminal
12	XCK	O	Clock (16.9344MHz) output (Not used, open)
13	TEST	I	Test mode selection (Not used, connected to power supply.)
14	TX	O	Digital signal output (Not used, open)
15	SLEEP	I	Mode selector ("L": normal, "H": SLEEP mode) (Not used, connected to GND)
16	CSEL	I	Test terminal ("L": normal) (Not used, connected to GND)
17	X1	I	Clock input (16.9344MHz)
18	X2	O	Clock output (16.9344MHz) (Not used, open)
19	VSS	—	GND terminal
20	BLKCK	O	Sub-code block (Q data) clock (75Hz)
21	$\overline{\text{CLDCK}}$	O	Sub-code frame (Q data) clock (7.35kHz)
22	$\overline{\text{SUBQ}}$	O	Sub-code (Q data) output
23	$\overline{\text{RST}}$	I	Reset signal input (reset at "L")
24	MLD	I	Command load signal input
25	MCLK	I	Command clock signal input
26	MDATA	I	Command data input
27	DMUTE	I	Muting control
28	$\overline{\text{TRON}}$	I	Tracking servo ON signal (tracking servo ON at "L")
29	STAT	O	Processing condition (CRC, CUE, CLVS, TT STOP, FCLV)
30	SUBC	O	Sub-code serial output data (Not used, open)
31	SBCK	I	Clock for sub-code serial output (Not used, open)
32	SMCK	O	Clock output (4.2336MHz)
33	VDD	I	Power supply terminal
34	MEMP	I	Emphasis signal input (Not used, open)
35	FG	I	Spindle motor FG signal input (Not used, open)
36	PC	O	Spindle motor ON signal (ON at "L")
37	EC	O	Spindle motor drive signal
38	RESY	O	Resynchronizing signal (Not used, open)
39	DO	I	Drop-out signal (Drop-out at "H")
40	SRF	I	EFM signal input (DSL)
41	EFM	I	EFM signal input (PLL)
42	PCK	I	PLL extract clock input (4.3218MHz)
43	FPC	O	PLL frequency comparision signal
44 ∫ 51	D7 ∫ D0	I/O	16K RAM data input/output
52	RAM/OE	O	16K RAM $\overline{\text{OE}}$ signal
53	RAM/WE	O	16K RAM $\overline{\text{WE}}$ signal
54 ∫ 64	RAM/A0 ∫ RAM/A10	O	16K RAM address signal (RAMA0: LSB, RAMA10: MSB)

• IC401 (MN1554PJZ-1): System control

Pin No.	Mark	I/O Division	Function
1	BRECV	——	(Not used, open)
2	BSEND	——	(Not used, open)
3	SYNC	O	(Not used, open)
4	SIRQ	I	Not used (connected to power supply)
5	BLKCK	I	Sub-code block (Q data) clock input (75Hz)
6	CLDCK	I	Sub-code block (Q data) clock input (7.35kHz)
7	SBO	I	(Not used, open)
8	SUBQ	I	Sub-code (Q data) input
9	RST	I	Reset signal input
10 ∫ 13	F/S SW, P21 ∫ P23	O	Not used (connected to power supply)
14	CLOSE	O	Loading motor "Close" command
15	OPEN	O	Loading motor "Open" command
16	SLOW	O	(Not used, open)
17	MUTE	O	Muting control
18	SEEK	O	Traverse servo control (Not used, open)
19	NC	–	Not connected
20	TRV.R	O	Traverse "Reverse" command signal
21	TRV.F	O	Traverse "Forward" command signal
22	CNT4	O	Optical servo IC control signal (KICKR: Kick direction [reverse] command)
23	CNT3	O	Optical servo IC control signal (KICKF: Kick direction [forward] command)
24	CNT2	O	Optical servo IC control (TRON: Tracking servo)
25	VDD	I	Power supply terminal
26	DOWN	O	(Not used, open)
27	UP	O	(Not used, open)
28	CNT1	O	Optical servo IC control signal (FOON: Focus servo)

Pin No.	Mark	I/O Division	Function
29	CLOSE SW	I	Disc holder "Open" detection
30	OPEN SW	I	Disc holder "Close" detection
31	BCLK	I	(Not used, connected to GND)
32	BDATA	I	(Not used, connected to GND)
33	STAT	I	Processing status input from signal processing LSI
34	COMP	O	TOC reading control (ON at "L") (connected to GND)
35	FLOCK	I	Optical servo condition (focus) input
36	SENSE	I	Optical servo condition (track cross) input
37	RECV	I	Data receipt command signal
38	SEND	I	Data transmission command signal
39	ACK	I	Data discrimination signal
40	CLK	I	Data lock signal
41 ∫ 44	DATA0 ∫ DATA3	I	Key scan signal
45 ∫ 52	NC	I	Not connected
53	OSC2	I	Clock terminal
54	OSC1	I	Clock input
55	X1	I	Optical servo condition input
56	X0	O	(Not used, open)
57	GND	—	GND terminal
58	DMUTE	O	Muting control
59	MDATA	O	Command data output
60	MCLK	O	Data clock output (command clock signal)
61	MLD	O	Data output (command load signal)
62	DOUTON	O	Optical output control signal (Not used, open)
63	EMPH	O	Emphasis signal output
64	NC	——	Not connected

• IC601 (MB88725BPJV): System control and FL drive

Pin No.	Mark	I/O Division	Function
1 ⟆ 14	C0 ⟆ C13	O	FL grid signal
15	C14	O	LED drive signal (PAUSE)
16	C15	O	LED drive signal (PLAY)
17	P00	O	Key scan signal
18	P01		
19	P02	O	Data discrimination signal signal
20	P03	O	Data lock signal
21 ⟆ 24	P10 ⟆ P13	O	Key scan signal
25	P40	I	Remote control signal input
26	P41	—	(Not used, connected to GND)
27	P42	O	Data receipt command signal
28	P43	O	Data transmission command signal
29	P50	—	Synchro edit control terminal
30	P51	I	
31	$\overline{\text{RES}}$	I	Reset signal input (reset at "L")
32	VSS	—	GND terminal

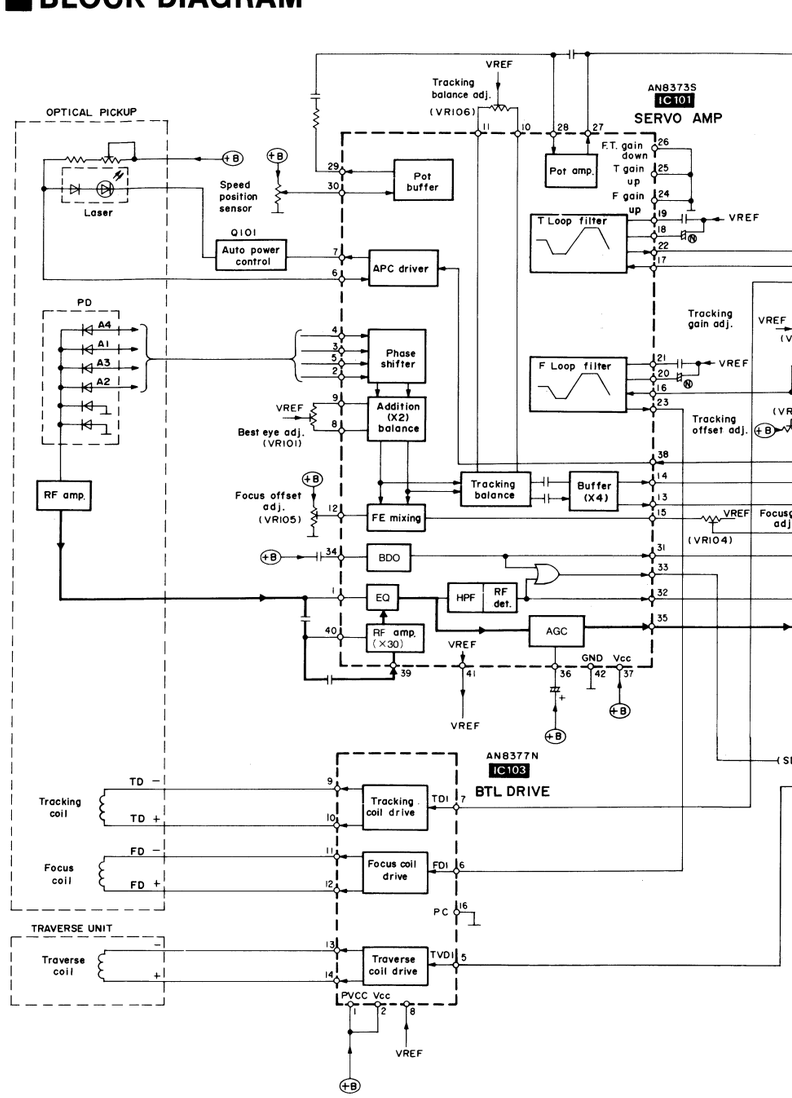
Pin No.	Mark	I/O Division	Function
33	X	I	Clock signal input (4.2336MHz)
34	EX		
35	SE	I	Not used, connected to power supply
36	FD	—	GND terminal
37	XL	O	Not used, open
38	EXL	O	(Not used, connected to GND)
39) 42	P60) P63	I	Key return signal
43 (46	P70 (P73		
47	VPP	I	FL drive power supply
48 ⟆ 63	S0 ⟆ S15	O	FL anode signal
64	VCC	I	Power supply terminal

• IC801 (MN6472): Digital filter & D/A converter

Pin No.	Mark	I/O Division	Function
1	192fs	O	192fs (8.4672MHz) output (Not used, open)
2	LRPOL	I	L/R clock selector (Not used, connected power supply)
3	LRCLK	I	L/R discrimination signal input
4	BCLK	I	Serial bit clock input
5	SR DATA	I	Serial data input (MSB first)
6	DV_{SS}	—	Digital GND terminal
7	384fs	O	384fs (16.9344MHz) output
8	MDATA	I	Mode control data
9	MCLK	I	Data clock for MDATA
10	MLD	I	Command load input (load: L)
11	RST	I	Reset signal input
12	IE	I	(Not used, open)
13	TP1	O	Test terminal
14	TP2		
15	TEST1	I	Test terminal 1 (Connected to GND)
16	D V_{DD}	I	Digital power supply terminal
17	TEST2	I	Test terminal 2 (Connected to GND)
18	X3	I	(Not used, connected to GND)
19	SEL1	I	(Not used, connected to GND)
20	SEL2	I	(Not used, connected to GND)
21	A $V_{DD}1$	I	Analog power supply terminal

Pin No.	Mark	I/O Division	Function
22	OUTL2 (−)	O	Lch data output (−)
23	OUTL2 (+)	O	Lch data output (+)
24	OUTL1 (−)	O	Lch data output (−)
25	OUTL1 (+)	O	Lch data output (+)
26	A $V_{SS}1$	—	Analog GND terminal
27	NC	—	Not connected
28	A $V_{SS}2$	—	Analog GND terminal
29	OUTR1 (+)	O	Rch data output (+)
30	OUTR1 (−)	O	Rch data output (−)
31	OUTR2 (+)	O	Rch data output (+)
32	OUTR2 (−)	O	Rch data output (−)
33	A $V_{DD}2$	I	Analog power supply terminal
34	D $V_{DD}1$	I	Digital power supply terminal
35	D $V_{SS}1$	I	Digital GND terminal
36	X2	O	Clock output
37	X1	I	Clock input
38	D $V_{SS}2$	—	Digital GND terminal
39	NSUB	I	Sub-strate terminal (Not used, connected to power supply)
40	D $V_{DD}2$	I	Digital power supply terminal
41	CLK SEL	—	(Not used, connected to GND)
42	ZFLAGB	O	Zero input det. terminal

■ BLOCK DIAGRAM



AN8374S
IC102
SERVO PROCESSOR

CXK5816M
IC302
16K RAM

TOTX174-A
IC303
DIGITAL OUT (OPTICAL)

MN6625
IC301
DIGITAL SIGNAL PROCESSOR

MN6472
IC801
DIGITAL FILTER & D/A CONVERTER

M5238FPTA IC807 (1/2)
M5218L IC871 (1/2)
M5238FPTA IC808 (1/2)
VR871 (HEADPHONES LEVEL)
HEAD-PHONES

M5219FPTA IC803
M5219FPTA IC805 (1/2)
M5219FPTA IC804
M5219FPTA IC806 (1/2)
M5219FPTA,M5238FPTA IC805 IC807 (1/2)
M5219FPTA,M5238FPTA IC806 IC808 (1/2)
LINE OUT

MN1554PJZ-1
IC401
SYSTEM CONTROL

M88875B8PJV
IC601
FL DRIVE & KEY MATRIX CONTROL

RCD0003
IC602
Remote control receiver

BA4558FT1
IC402, 1

Note:
→ Audio signal

■ SCHEMATIC DIAGRAM (Parts list on pages 44, 45, 51, 52.)

(This schematic diagram may be modified at any time with development of new technology.)

Notes:

- **S1** : Power switch in "**on**" position.
- **S2** : Voltage selector switch. (For [GC, PX] areas.)
- **S101, 102** : Disc holder open/close detection switch.
- **S601** : Tape side select (side A/B) switch.
- **S602** : Time fade (time fade) switch.
- **S603** : Program (program) switch.
- **S604** : Tape length (tape length) switch.
- **S605** : Peak level search (peak search) switch.
- **S606** : Display on/off (display on/off) switch.
- **S607** : Recall (recall) switch.
- **S608** : Disc link (disc link) switch.
- **S609** : Just time (just time) switch.
- **S610** : Time mode select (time mode) switch.
- **S611** : Clear (Clear) switch.
- **S612~617, 619~624, 626~630, 632~636** : Numeric (0~20) switches.
  (S612: 1, S613: 5, S614: 9, S615: 13, S616: 17, S617: 0, S619: 2, S620: 6, S621: 10, S622: 14, S623: 18, S624: >20, S626: 3, S627: 7, S628: 11, S629: 15, S630: 19, S632: 4, S633: 8, S634: 12, S635: 16, S636: 20)
- **S618** : Disc holder open/close (▲ open/close) switch.
- **S625** : Stop (■ stop) switch.
- **S631** : Pause (▮▮ pause) switch.
- **S637** : Play (▶ play) switch.
- **S638** : Timer (timer) switch.
- **S639** : Auto cue (auto cue) switch.

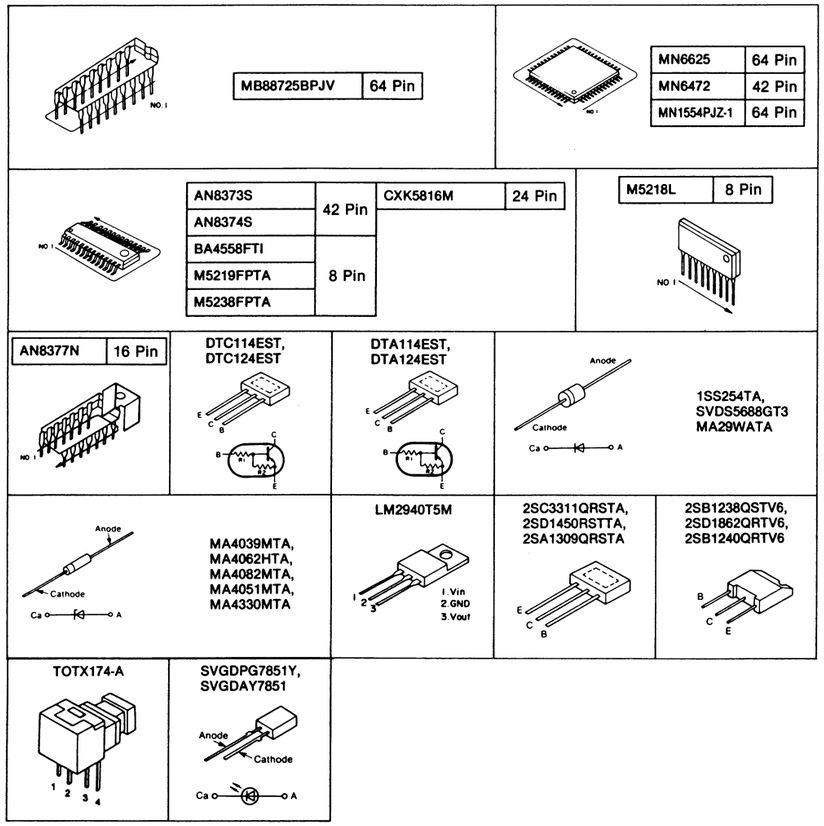
- The voltage value and waveforms are the reference voltage of this unit measured by DC electronic voltmeter (high impedance) and oscilloscope on the basis of chassis. Accordingly, there may arise some error in voltage values and waveforms depending upon the internal impedance of the tester or the measuring unit.
  * The parenthesized are the values of voltage generated during playing (Test disc 1kHz, L+R, 0dB), others are voltage values in stop mode.
- Important safety notice:
  Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
- –< >–/···< >···: Positive voltage lines and negative voltage lines.
- ▒▒▒▒▒▒▒▒ : audio signal lines.

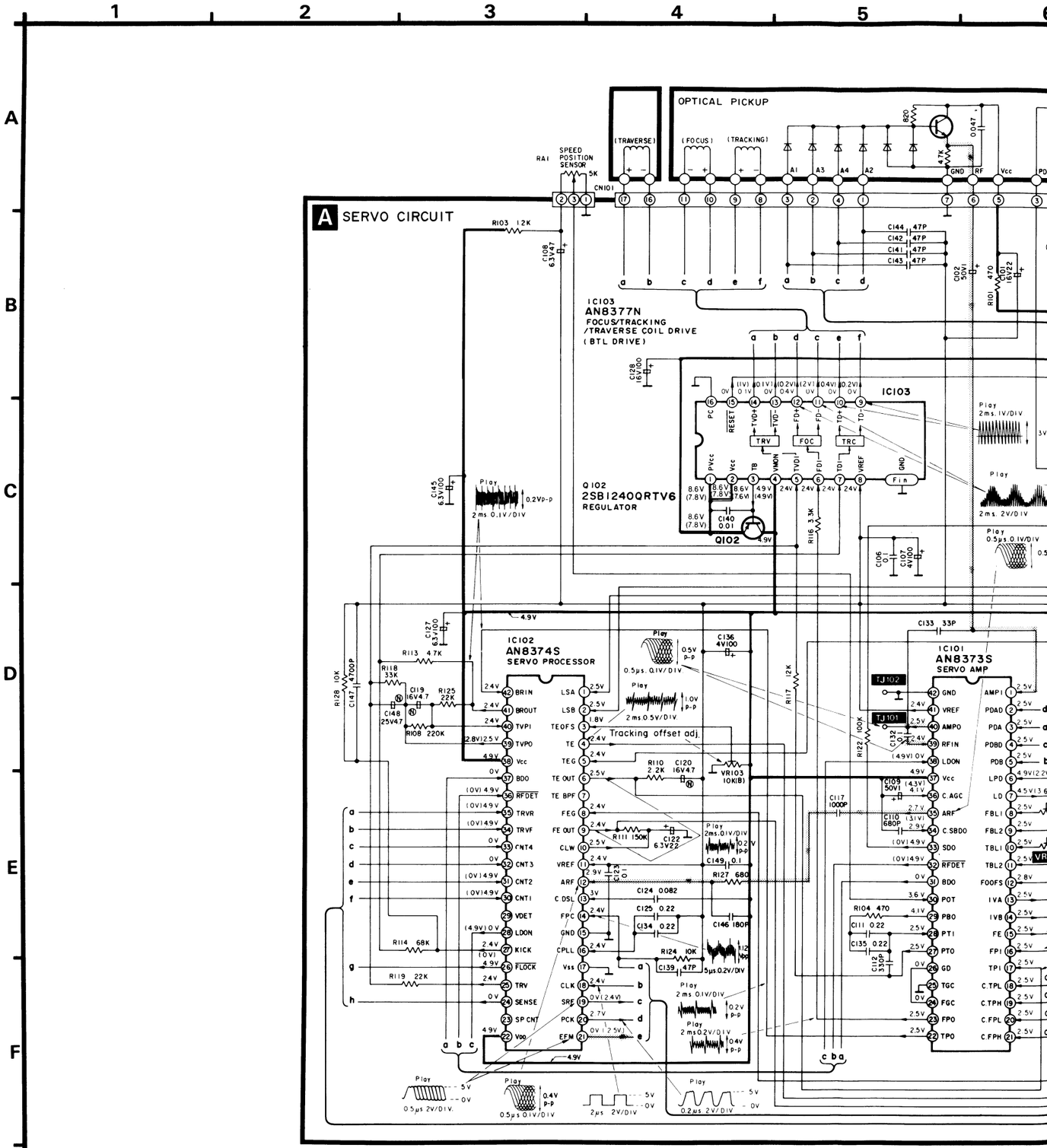
Caution!

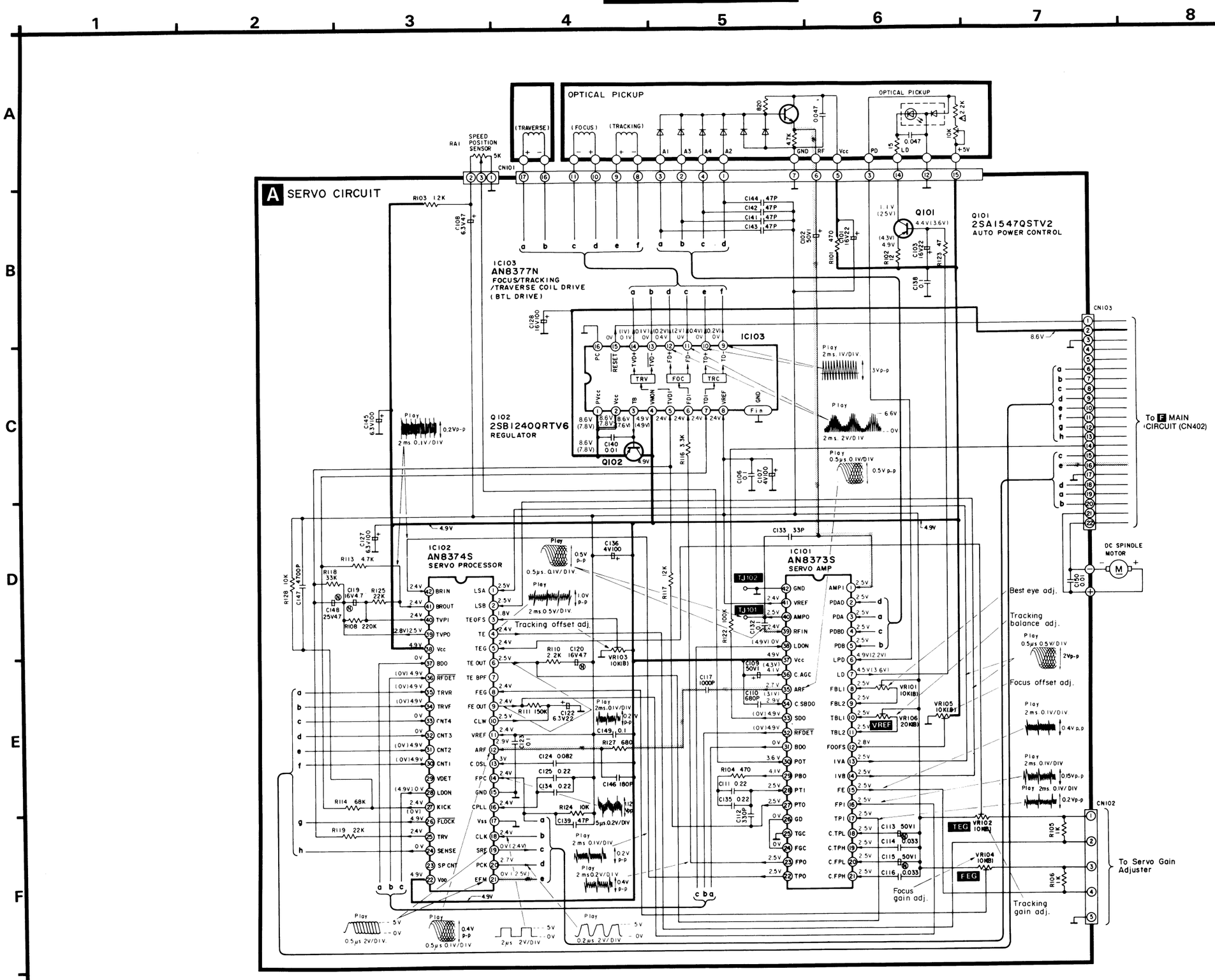
IC and LSI are sensitive to static electricity.
Secondary trouble can be prevented by taking care during repair.

- Cover the parts boxes made of plastics with aluminum foil.
- Ground the soldering iron.
- Put a conductive mat on the work table.
- Do not touch the pins of IC or LSI with fingers directly.

• TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODES





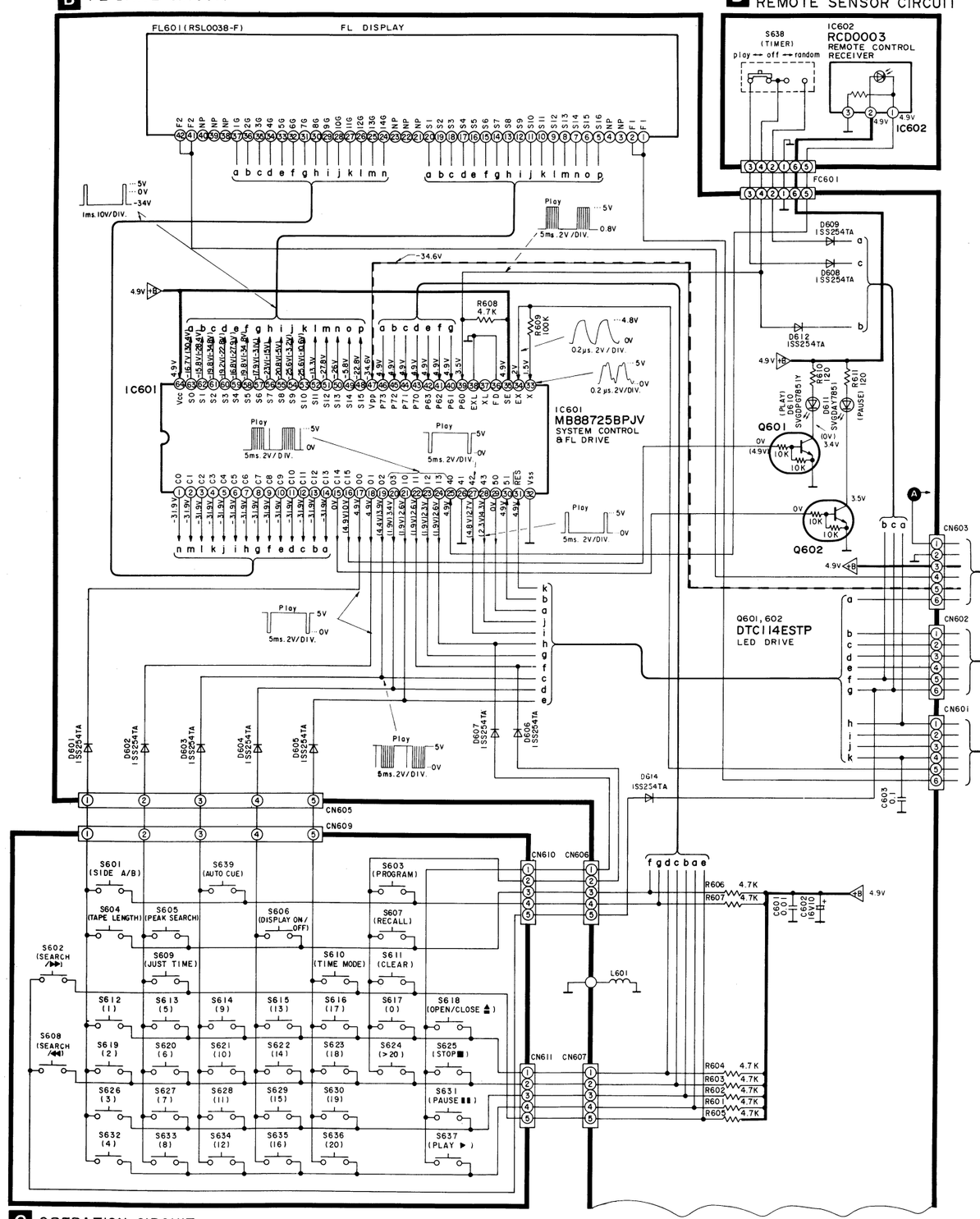

A SERVO CIRCUIT
OPTICAL PICKUP
OPTICAL PICKUP
(TRAVERSE)
(FOCUS)
(TRACKING)
SPEED POSITION SENSOR 5K
RA1
CN101
A1
A3
A4
A2
GND
RF
Vcc
PD
LD
+5V
820
0.047
47K
2.2K
10K
R103 1.2K
C108 63V47
C144 47P
C142 47P
C141 47P
C143 47P
C102 50V1
R101 470
C101 16V22
Q101
2SA1547QSTV2
AUTO POWER CONTROL
R102 2
C103 16V22
R123 47
C138 0.1
IC103
AN8377N
FOCUS/TRACKING
/TRAVERSE COIL DRIVE
(BTL DRIVE)
C128 16V100
IC103
RESET
TVD+
TVD-
FD+
FD-
TD+
TD-
TRV
FOC
TRC
PVcc
Vcc
TB
VMON
TVDI
FDI
TDI
VREF
GND
Fin
Q102
2SB1240QRTV6
REGULATOR
C140 0.01
R116 3.3K
C145 6.3V100
C106 0.1
C107 4V100
CN103
To F MAIN CIRCUIT (CN402)
DC SPINDLE MOTOR
C130 0.01
IC102
AN8374S
SERVO PROCESSOR
C127 6.3V100
R113 4.7K
R118 33K
C119 16V47
R125 22K
C148 25V47
R108 220K
R128 10K
C147 4700P
R119 22K
R114 68K
C136 4V100
R111 150K
C122 6.3V22
C123 0
C149 0.1
R127 680
C124 0.082
C125 0.22
C134 0.22
C146 180P
R124 10K
C139 47P
R112 1K
Tracking offset adj.
VR103 10K(B)
R110 2.2K
C120 16V47
IC101
AN8373S
SERVO AMP
TJ102
TJ101
C133 33P
R117 12K
R122 100K
C132 0.1
C109 50V1
C110 680P
C117 1000P
R104 470
C111 0.22
C135 0.22
C115 0.033
C113 50V1
C114 0.033
C116 0.033
VR101 10K(B)
VR105 10K(B)
VR106 20K(B)
VREF
TEG
VR102 10K(B)
FEG
VR104 10K(B)
R105 1K
R106 1K
CN102
To Servo Gain Adjuster
Best eye adj.
Tracking balance adj.
Focus offset adj.
Focus gain adj.
Tracking gain adj.
Play
2ms. 1V/DIV
3Vp-p
2ms. 2V/DIV
0.5µs. 0.1V/DIV
0.5V p-p
2ms. 0.1V/DIV
0.2Vp-p
0.5µs. 0.1V/DIV
0.5V p-p
2ms. 0.5V/DIV
1.0V p-p
0.5µs. 0.1V/DIV
2ms. 0.1V/DIV
0.2V p-p
2ms. 0.1V/DIV
0.4V p-p
2ms. 0.1V/DIV
0.2Vp-p
2ms. 0.1V/DIV
0.15Vp-p
2ms. 0.1V/DIV
0.2Vp-p
0.5µs. 2V/DIV
0.5µs. 0.1V/DIV
2µs. 2V/DIV
0.2µs. 2V/DIV
0.4V p-p

B FL DRIVE CIRCUIT

D TIMER SWITCH/ REMOTE SENSOR CIRCUIT

E MOTOR/ SWITCH CIRCUIT

F MAIN CIRCUIT



C OPERATION CIRCUIT

F MAIN CIRCUIT

G POWER SUPPLY CIRCUIT For [E,EG,GN

H HEADPHONES JACK CIRCUIT

B FL DRIVE CIRCUIT

Q401 2SD1862QRTV6 MOTOR DRIVE

IC402 BA4558FTI MOTOR DRIVE

IC401 MN1554PJZ-I SYSTEM CONTROL

Q402 2SB1240QRTV6 MOTOR DRIVE

Q403 2SD1862QRTV6 MOTOR DRIVE

Q404 2SB1240QRTV6 MOTOR DRIVE

Q351 DTA124ESTP MOTOR CONT.

IC301 MN6625 DIGITAL SIGNAL PROCESSOR

Q407 DTC124ESTP SWITCHING (SYNCHRO EDIT)

IC303 TOTX174-A OPTICAL TRANSMISSION MODULE

IC302 CXK5816M 16K RAM

Q901 DTA124ESTP MUTING CONT.

Q11 2SD1862QRTV6 REGULATOR

Q405,406 2SC3311QRSTA RESET

IC11 LM2940T5M REGULATOR

Q12 2SC3311QRSTA REGULATOR

Q13 2SA1309QRSTA REGULATOR

Q14 2SB1238QSTV6 REGULATOR

Q15 2SC3311QRSTA REGULATOR

Q16 2SA1309QRSTA REGULATOR

Q854 DTC124ESTP EMPHASIS CONTROL

Q855 DTA124ESTP EMPHASIS CONTROL

Q851 DTA114ESTP MUTING CONT.

Q852 2SA1309QRSTA MUTING CONT.

Q853 DTA124ESTP RESET

IC801 MN6472 DIGITAL FILTER/ D/A CONVERTER

Q901 ISS254TA

Q902 ISS254TA

IC871 M5218L HEADPHONES AMP

Q873,874 2SC3311QRSTA MUTING

IC803~806 M5219FPTA OP AMP

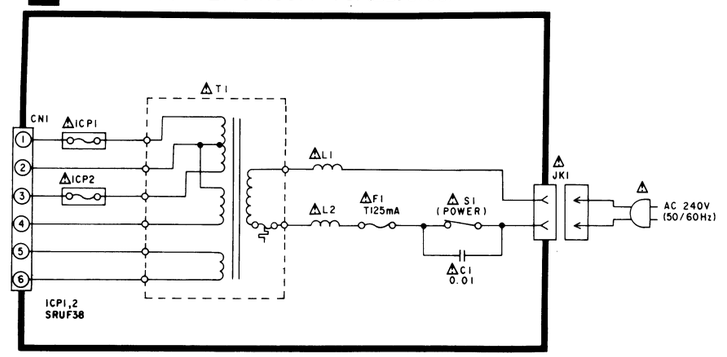
IC807,808 M5238FPTA BUFFER AMP

Q801,802 2SC3311QRSTA SWITCHING (EMPHASIS DRIVE)

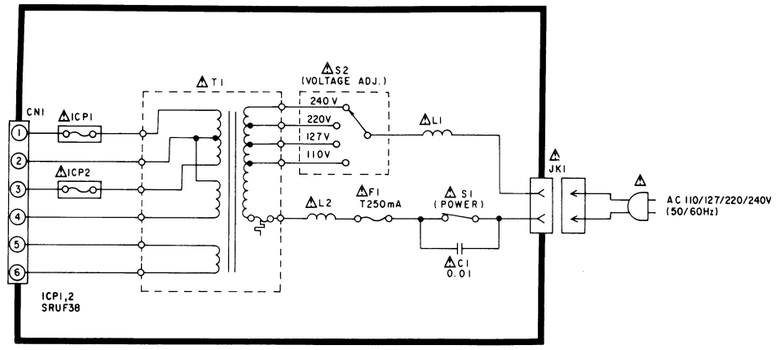
22 23 24 25 26 27 28 29 30 31

G POWER SUPPLY CIRCUIT For [E,EG,GN] areas.

G POWER SUPPLY CIRCUIT For (EB) area.

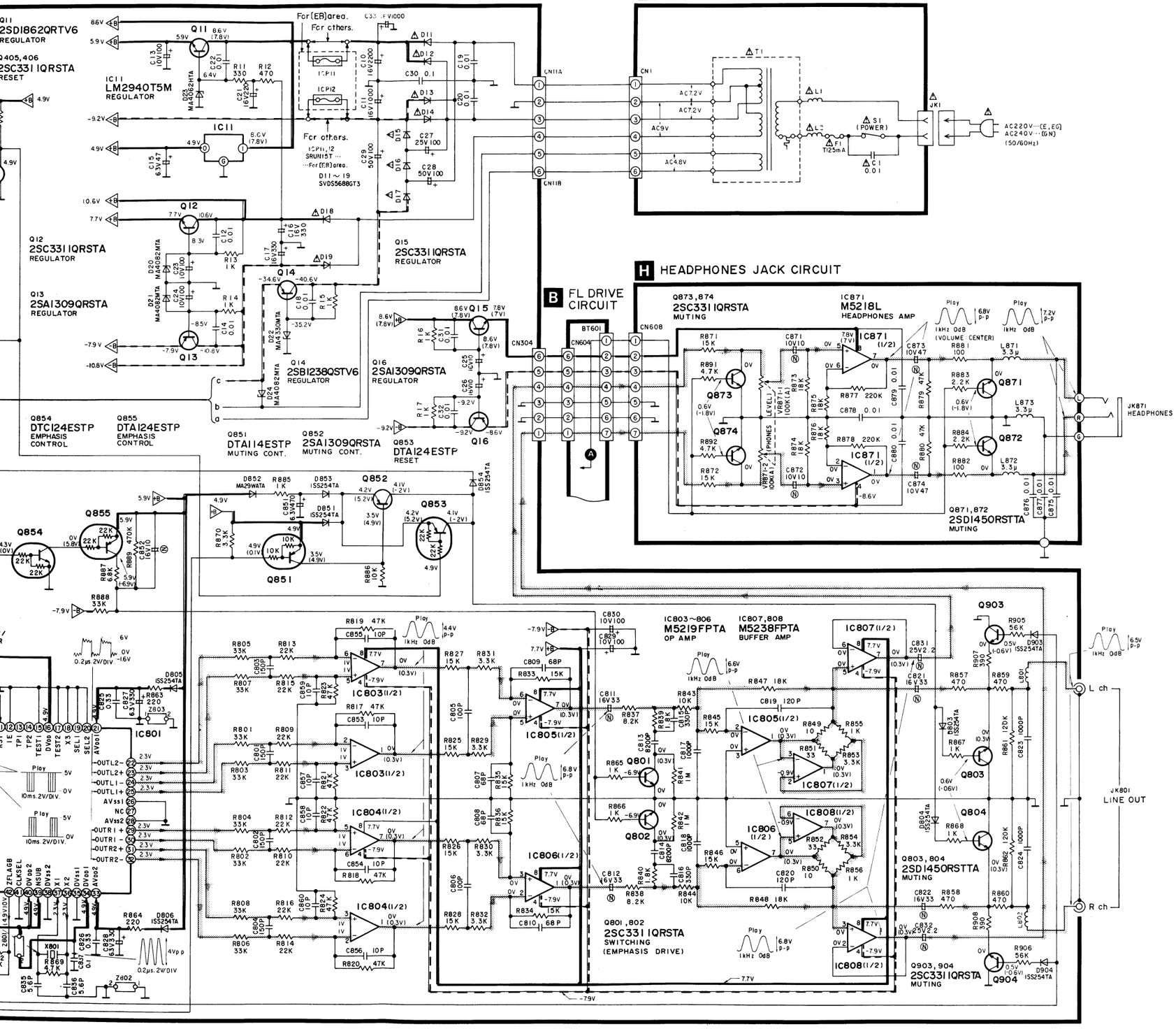


G POWER SUPPLY CIRCUIT For (GC, PX) areas.



B FL DRIVE CIRCUIT

H HEADPHONES JACK CIRCUIT



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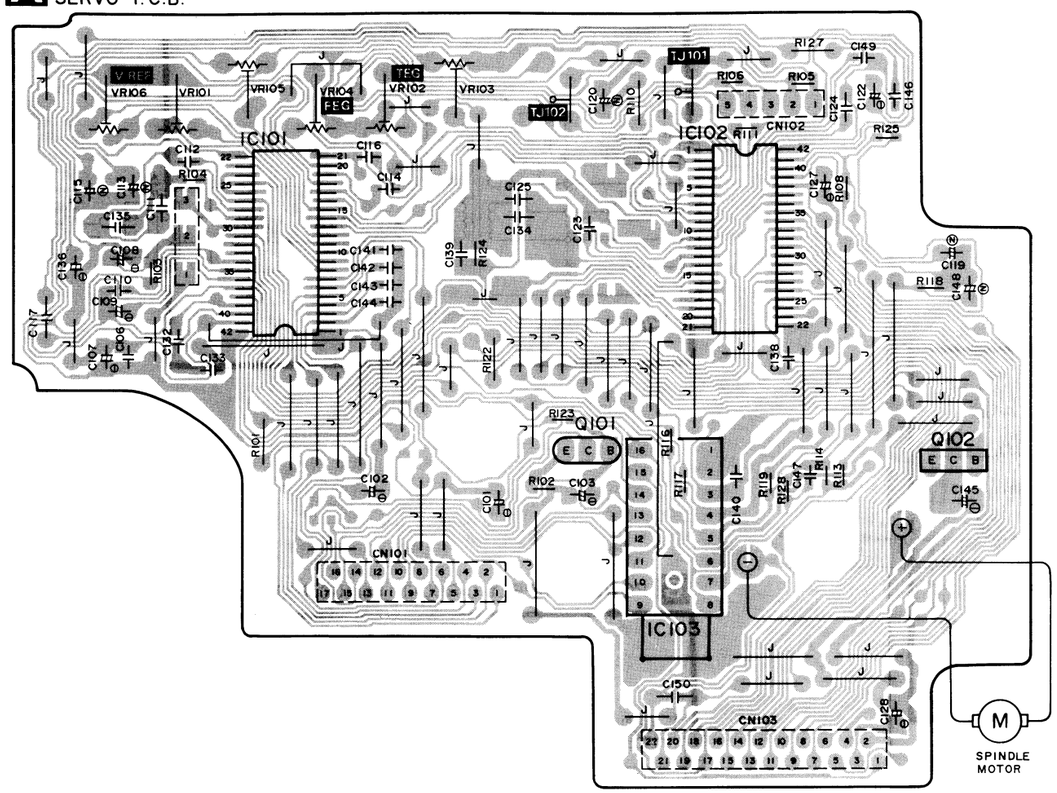
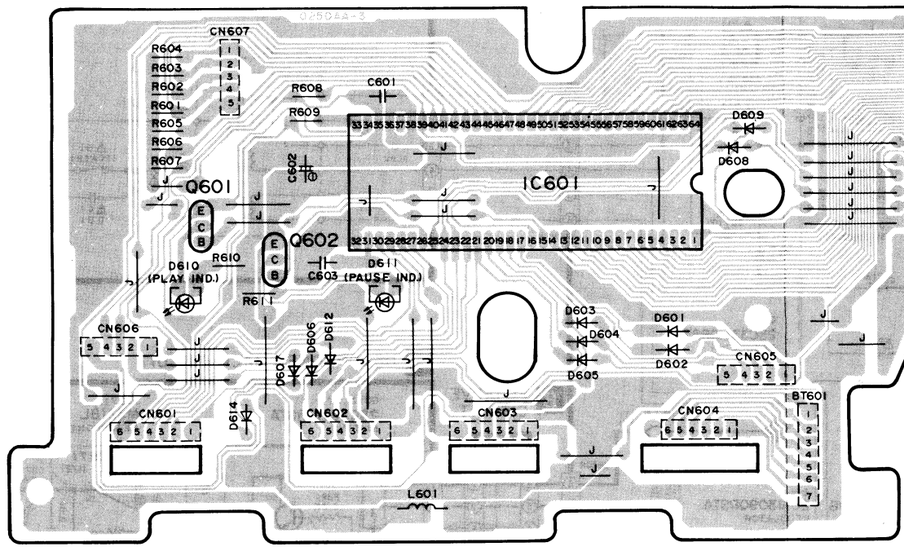
■ PRINTED CIRCUIT BOARDS

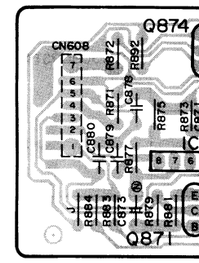
A SERVO P.C.B.



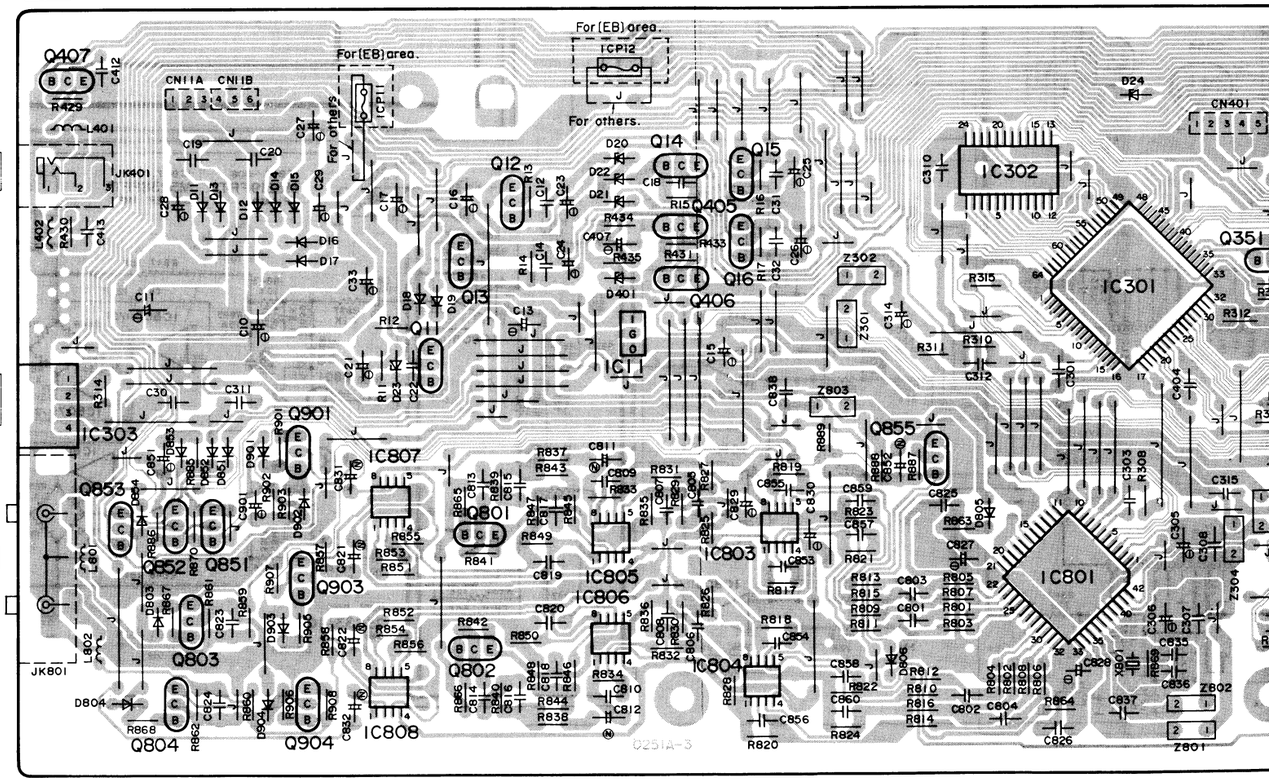
B FL DRIVE P.C.B.



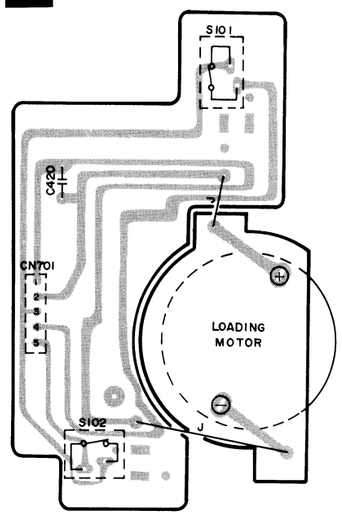
H HEADPHONE P.C.B.



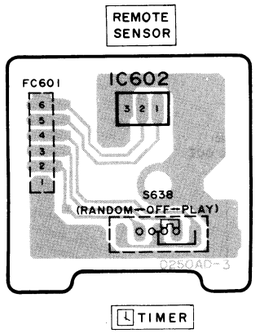
F MAIN P.C.B.



E MOTOR/SWITCH P.C.B.



D TIMER SWITCH/ REMOTE SENSOR P.C.B.



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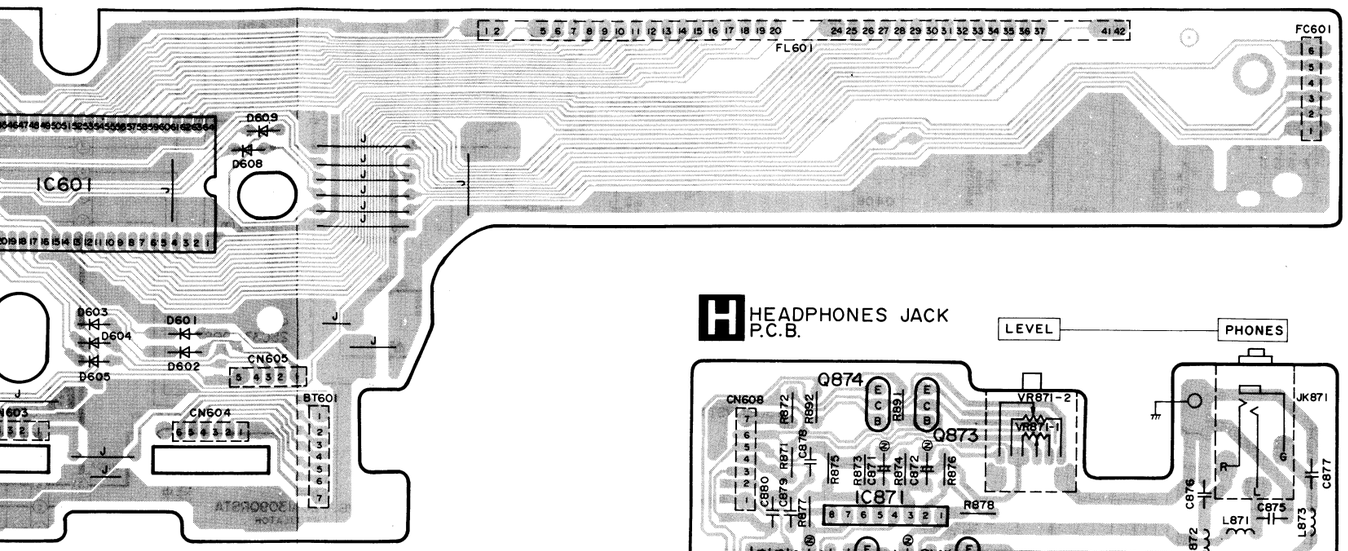
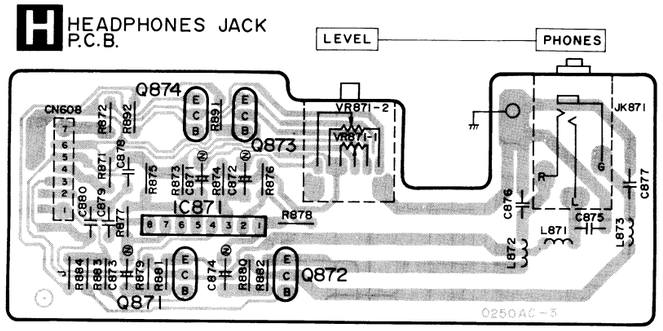
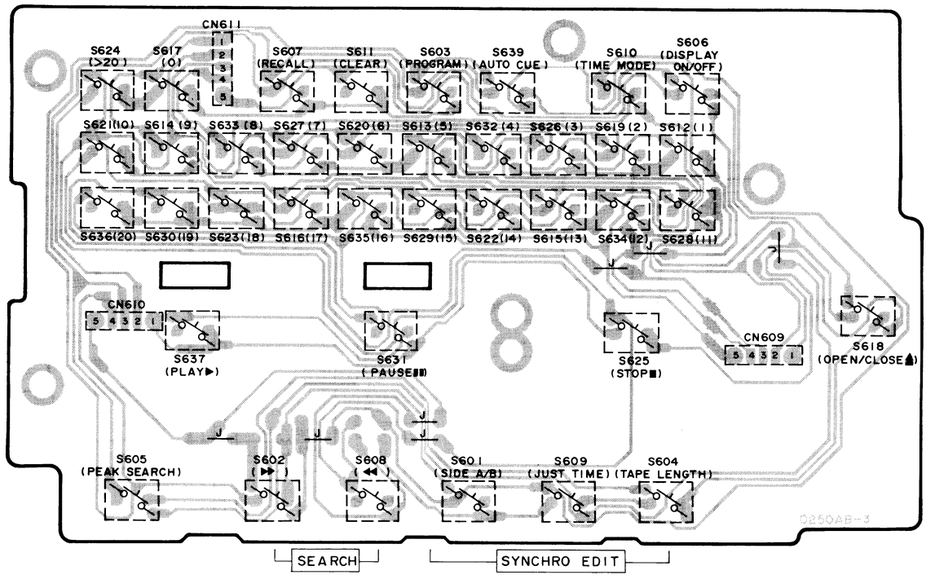
8 9 10 11 12 13 14 15 16 17

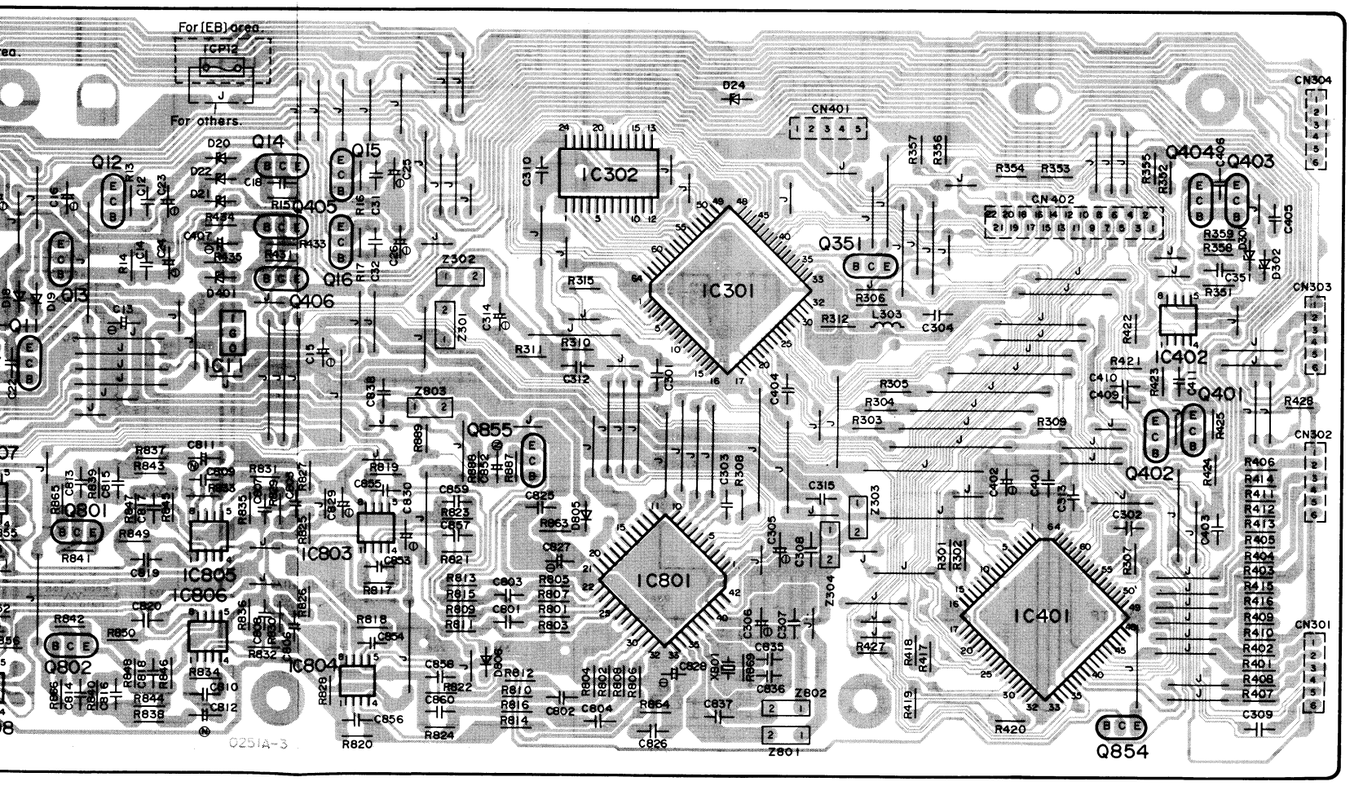


H HEADPHONES JACK P.C.B.

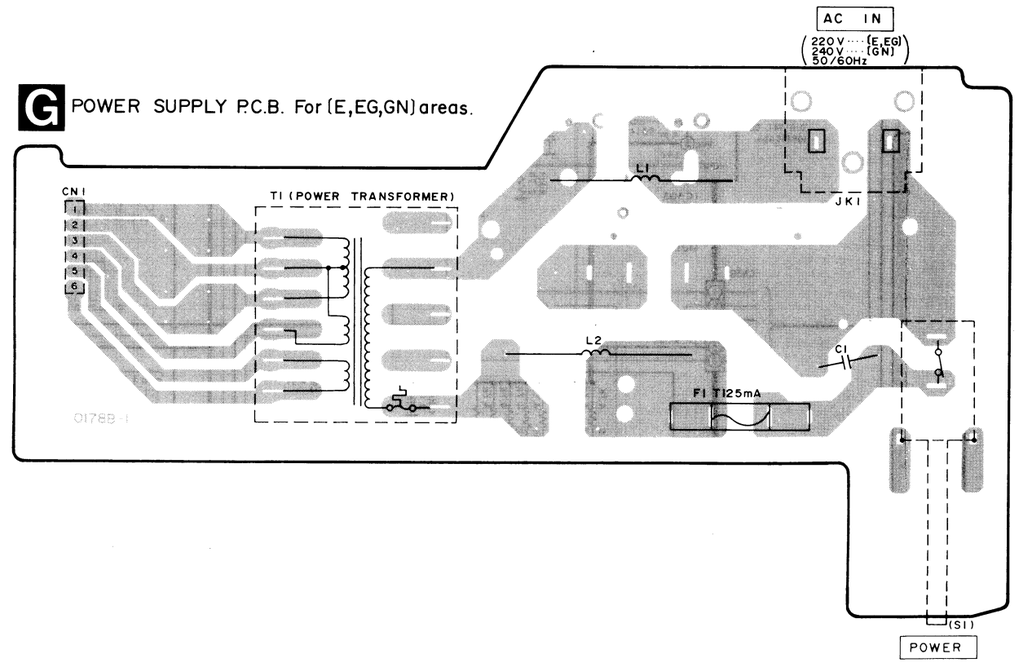


C OPERATION P.C.B.

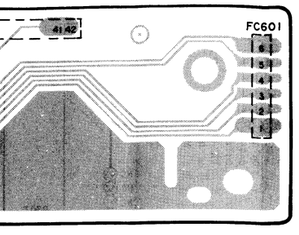


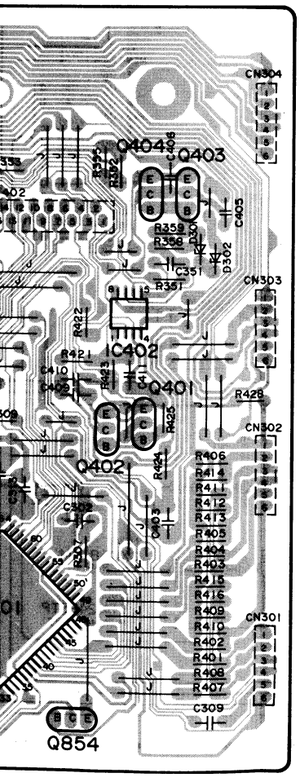


G POWER SUPPLY P.C.B. For [E,EG,GN] areas.

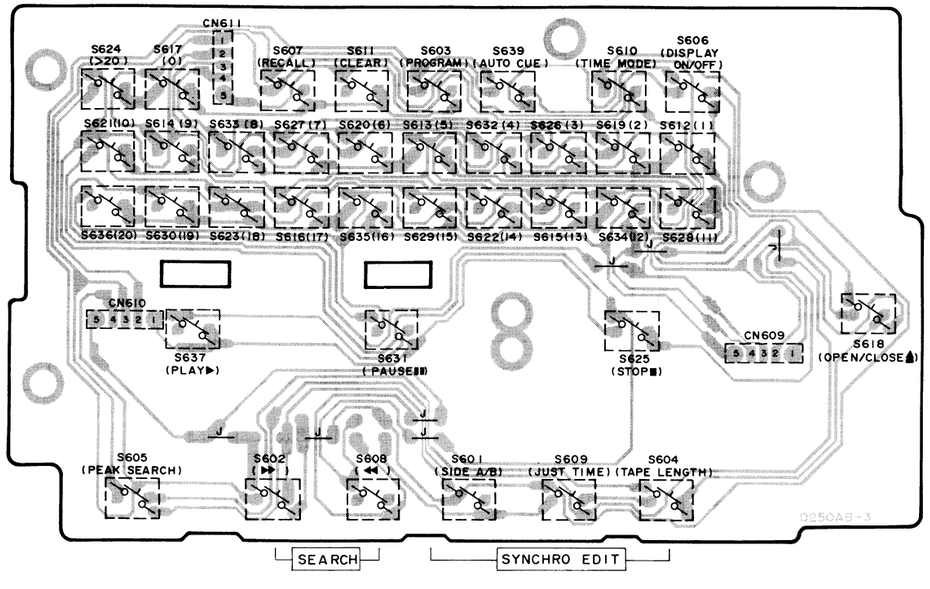


12 13 14 15 16 17 18 19 20 21

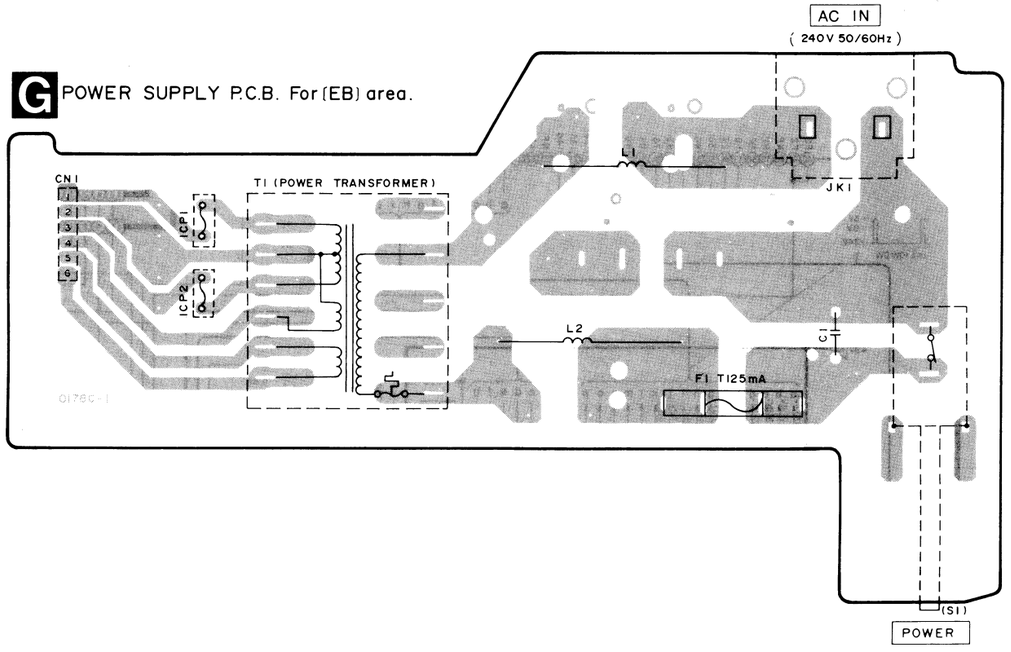




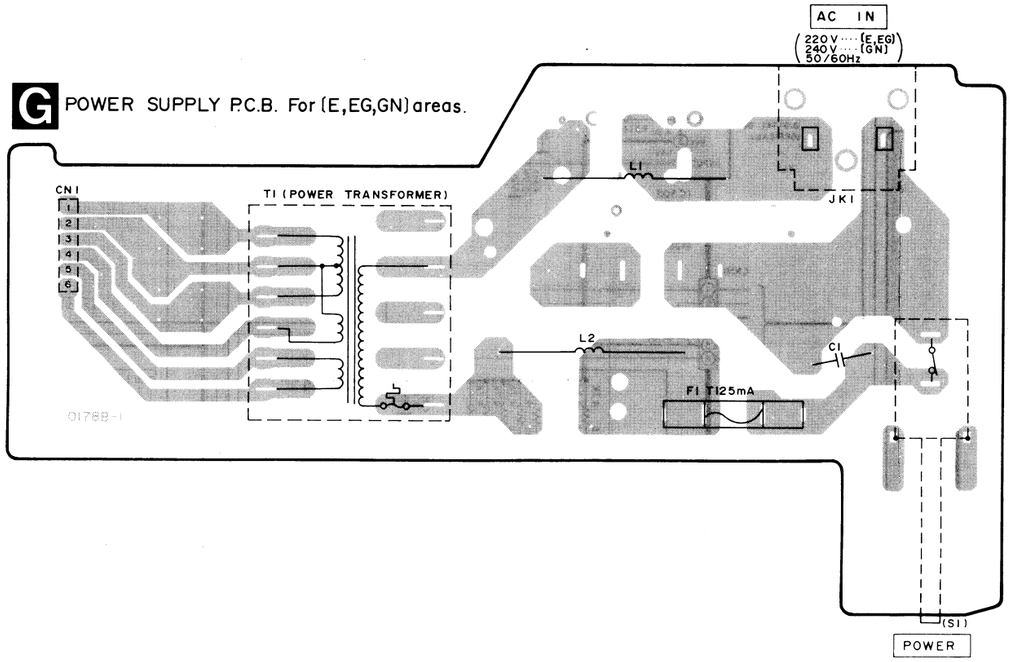
C OPERATION P.C.B.



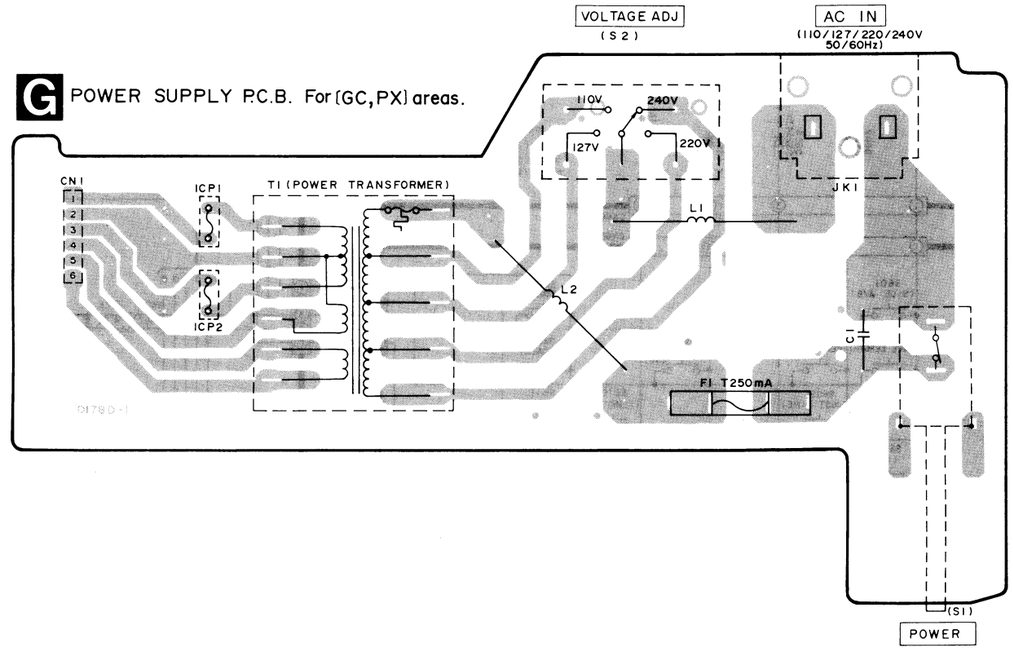
G POWER SUPPLY P.C.B. For (EB) area.



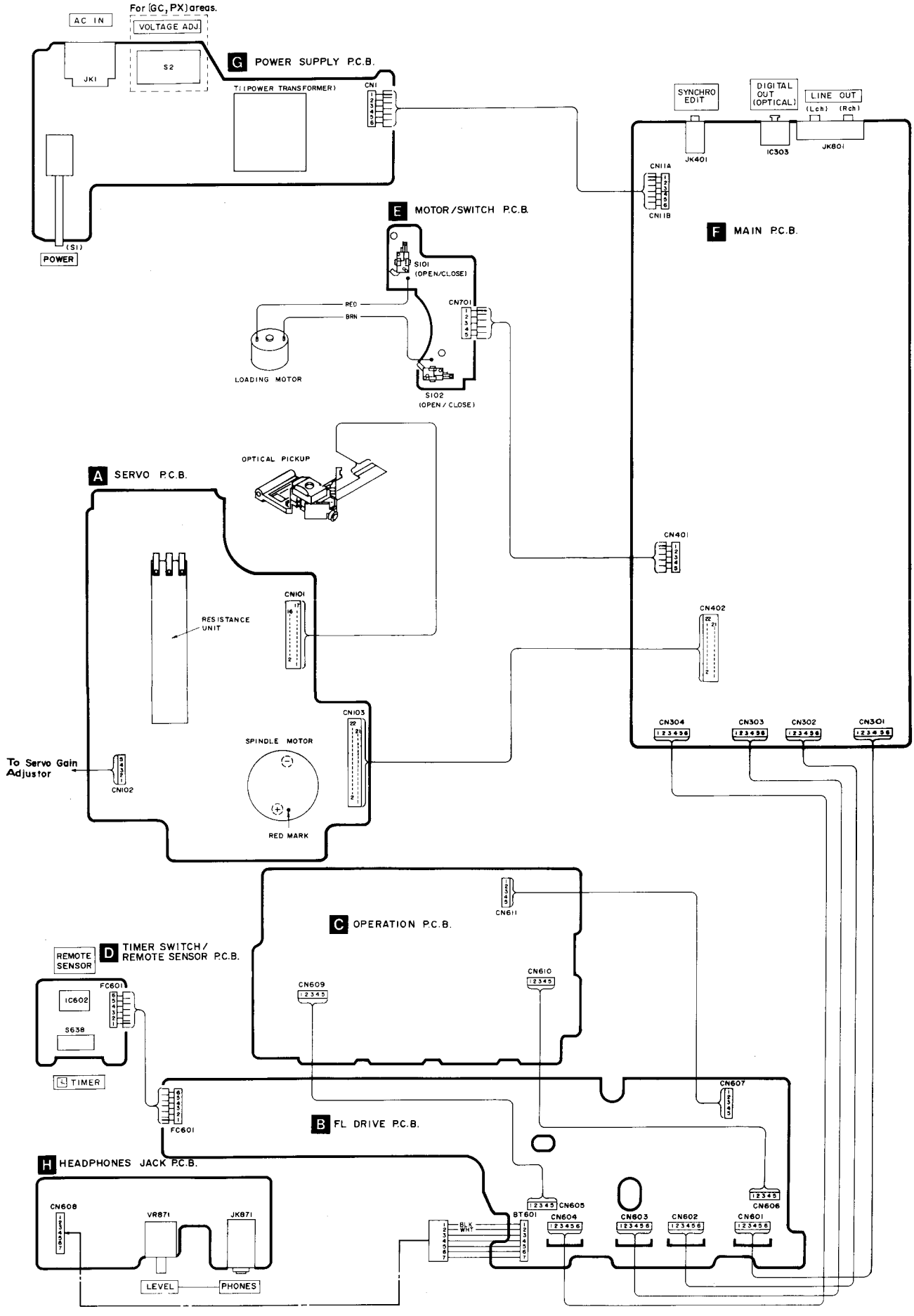
G POWER SUPPLY P.C.B. For (E,EG,GN) areas.



G POWER SUPPLY P.C.B. For (GC,PX) areas.

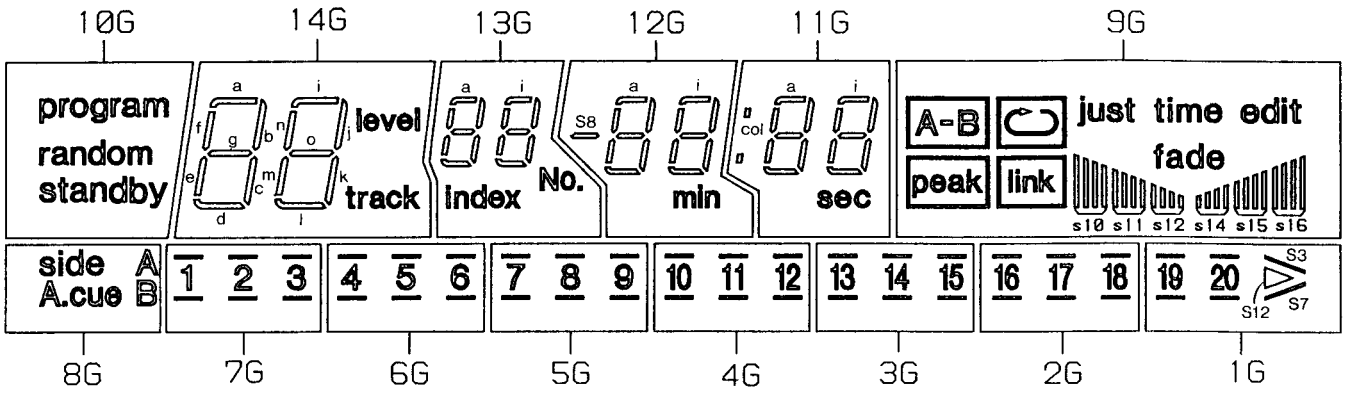


■ WIRING CONNECTION DIAGRAM



■ INTERNAL CONNECTION OF FL

• Grid connection diagram



• Anode connection table

	14G	13G	12G	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
S1	a	a	a	a	random	just	A.cue	(1)	(4)	(7)	(10)	(13)	(16)	(19)
S2	b	b	b	b	program	time	-	(2)	(5)	(8)	(11)	(14)	(17)	(20)
S3	f	f	f	f	-	edit	A	(3)	(6)	(9)	(12)	(15)	(18)	/
S4	g	g	g	g	-	link	B	1	4	7	10	13	16	19
S5	c	c	c	c	-	peak	side	(1)	(4)	(7)	(10)	(13)	(16)	(19)
S6	e	e	e	e	-	A-	-	(2)	(5)	(8)	(11)	(14)	(17)	(20)
S7	d	d	d	d	-	B	-	(3)	(6)	(9)	(12)	(15)	(18)	/
S8	level	No.	—	col	-		-	2	5	8	11	14	17	20
S9	i	i	i	i	-	-	-	-	-	-	-	-	-	-
S10	j	j	j	j	-		-	-	-	-	-	-	-	-
S11	n	n	n	n	standby			-	-	-	-	-	-	-
S12	o	o	o	o	-		-	3	6	9	12	15	18	▶
S13	k	k	k	k	-	fade	-	-	-	-	-	-	-	-
S14	m	m	m	m	-		-	-	-	-	-	-	-	-
S15	ℓ	ℓ	ℓ	ℓ	-		-	-	-	-	-	-	-	-
S16	track	index	min	sec	-		-	-	-	-	-	-	-	-

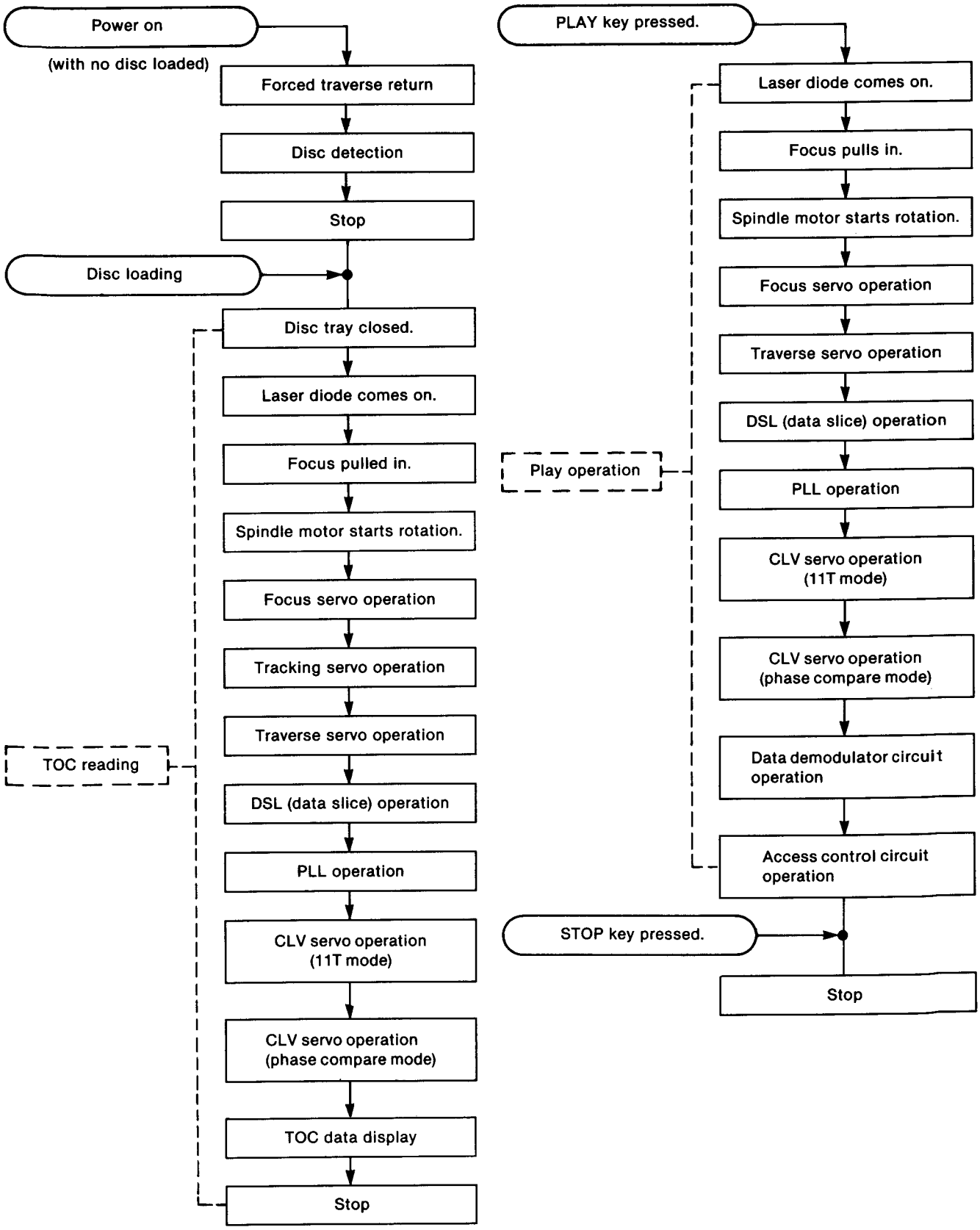
• Pin connection

Pin No.	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Connection	F 2	F 2	N P	N P	N P	1 G	2 G	3 G	4 G	5 G	6 G	7 G	8 G	9 G	10 G	11 G	12 G	13 G	14 G	N P	N P	N P	S 1	S 2	S 3	S 4	S 5	S 6	S 7	S 8	S 9	S 10	S 11	S 12	S 13	S 14	S 15	S 16	N P	N P	F 1	F 1

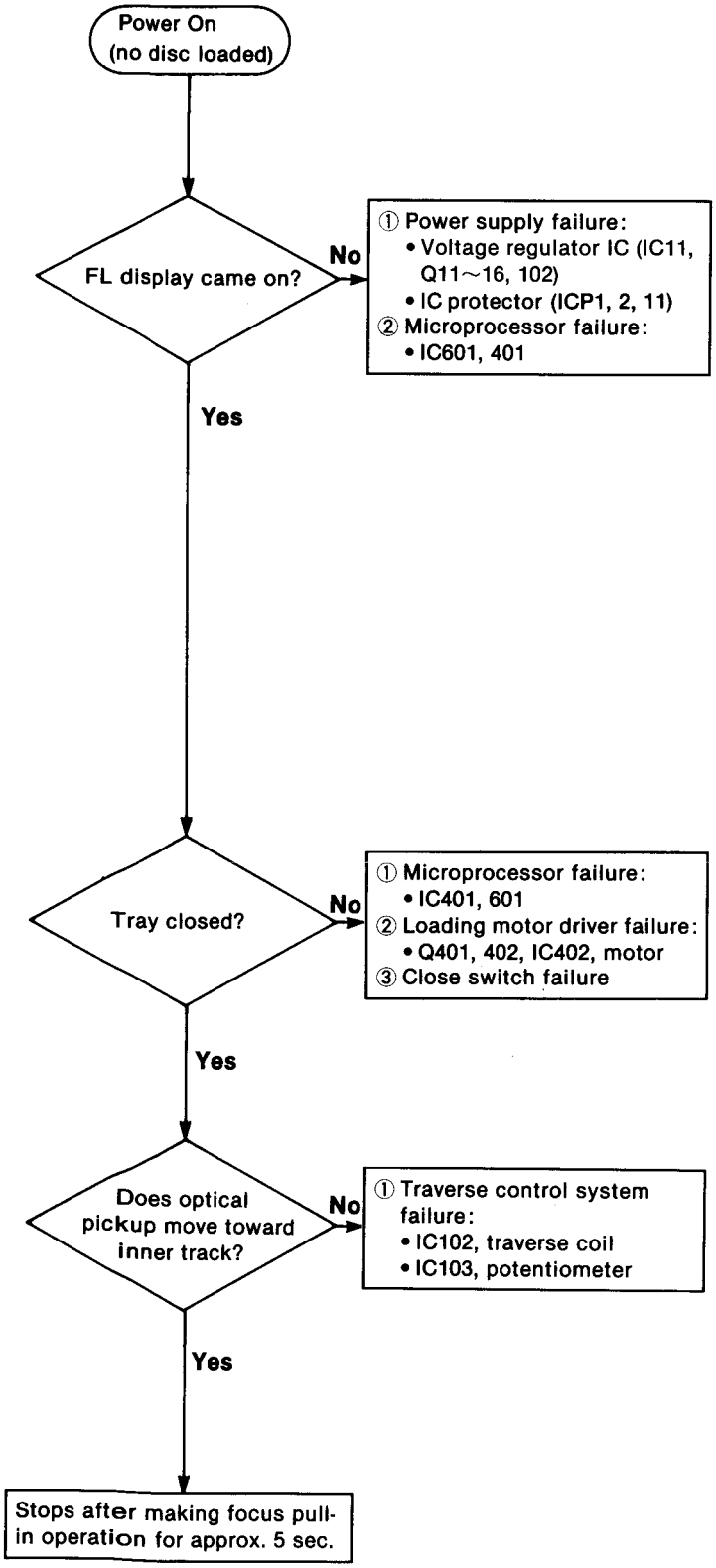
■ TROUBLESHOOTING GUIDE

SL-PS70 Operation Sequence Check Sheet

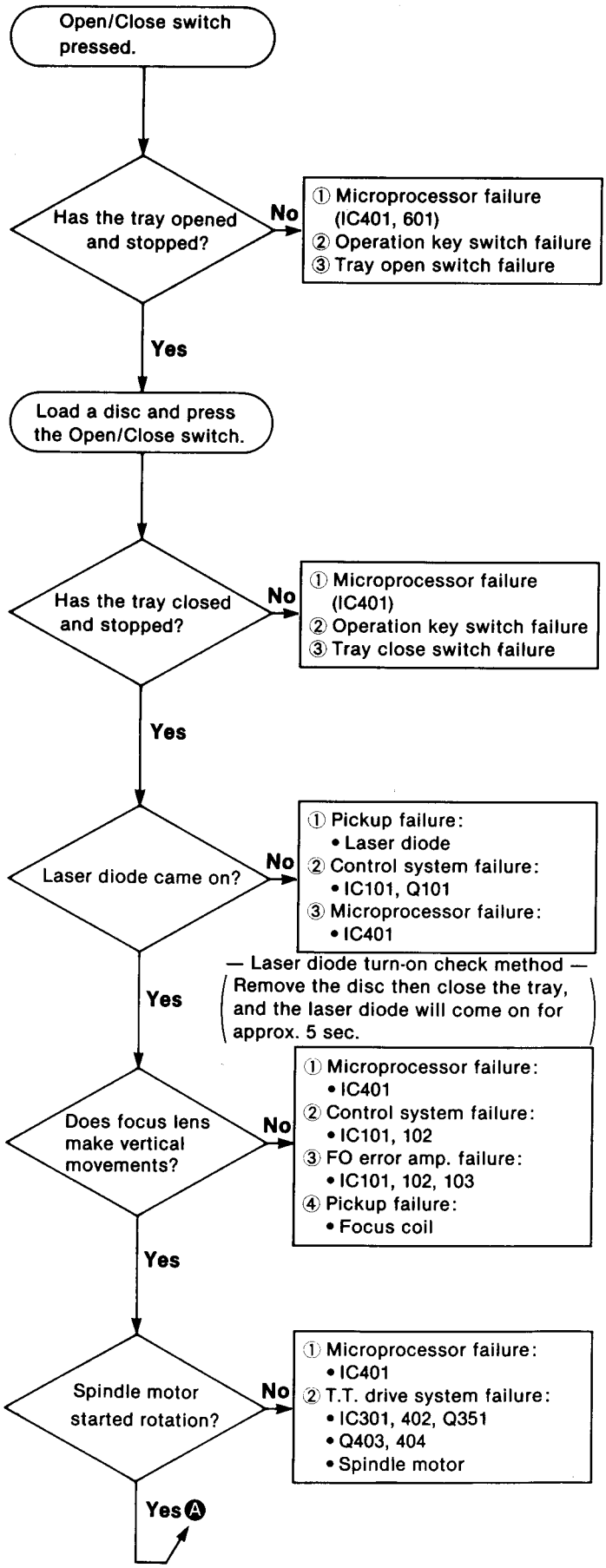
Play Operation Sequence

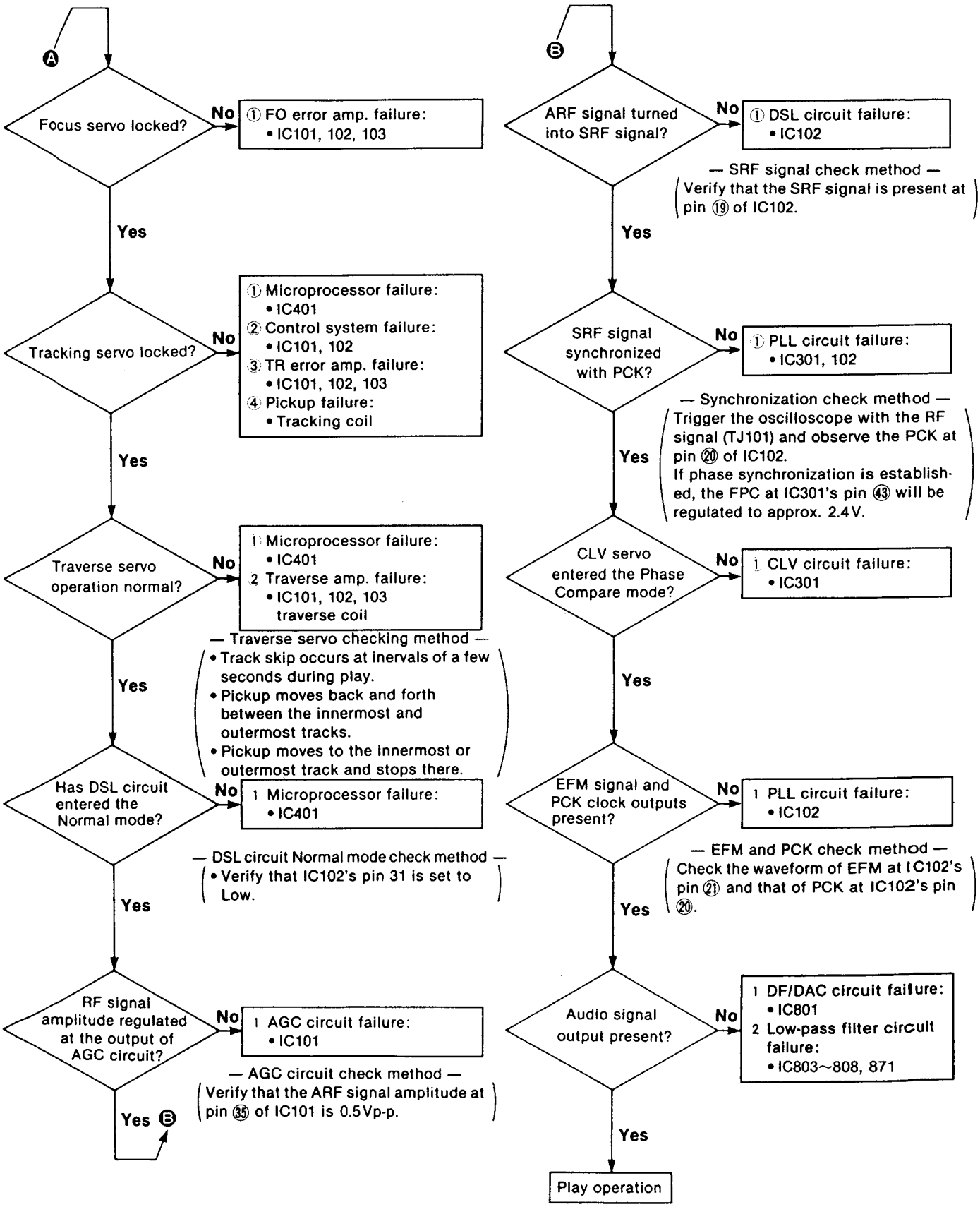


(Operation Sequence Just After Power On)



(TOC Read Operation-PLAY Operation)




Ⓐ
Focus servo locked?
No
① FO error amp. failure:
• IC101, 102, 103
Yes
Tracking servo locked?
No
① Microprocessor failure:
• IC401
② Control system failure:
• IC101, 102
③ TR error amp. failure:
• IC101, 102, 103
④ Pickup failure:
• Tracking coil
Yes
Traverse servo operation normal?
No
1 Microprocessor failure:
• IC401
2 Traverse amp. failure:
• IC101, 102, 103
traverse coil
— Traverse servo checking method —
• Track skip occurs at inervals of a few seconds during play.
• Pickup moves back and forth between the innermost and outermost tracks.
• Pickup moves to the innermost or outermost track and stops there.
Yes
Has DSL circuit entered the Normal mode?
No
1 Microprocessor failure:
• IC401
— DSL circuit Normal mode check method —
• Verify that IC102's pin 31 is set to Low.
Yes
RF signal amplitude regulated at the output of AGC circuit?
No
1 AGC circuit failure:
• IC101
— AGC circuit check method —
Verify that the ARF signal amplitude at pin ㉟ of IC101 is 0.5Vp-p.
Yes Ⓑ
Ⓑ
ARF signal turned into SRF signal?
No
① DSL circuit failure:
• IC102
— SRF signal check method —
Verify that the SRF signal is present at pin ⑲ of IC102.
Yes
SRF signal synchronized with PCK?
No
① PLL circuit failure:
• IC301, 102
— Synchronization check method —
Trigger the oscilloscope with the RF signal (TJ101) and observe the PCK at pin ⑳ of IC102.
If phase synchronization is established, the FPC at IC301's pin ㊸ will be regulated to approx. 2.4V.
Yes
CLV servo entered the Phase Compare mode?
No
1 CLV circuit failure:
• IC301
Yes
EFM signal and PCK clock outputs present?
No
1 PLL circuit failure:
• IC102
— EFM and PCK check method —
Check the waveform of EFM at IC102's pin ㉑ and that of PCK at IC102's pin ⑳.
Yes
Audio signal output present?
No
1 DF/DAC circuit failure:
• IC801
2 Low-pass filter circuit failure:
• IC803~808, 871
Yes
Play operation

■ REPLACEMENT PARTS LIST

Notes : • Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
• The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.)
Parts without these indications can be used for all areas.

Ref. No.	Part No.	Part Name & Description	Remarks
		INTEGRATED CIRCUIT(S)	
IC11	LM2940T5M	I. C, REGULATOR	
IC301	MN6625	I. C, DIGITAL SIGNAL PROCESS.	
IC302	CXK5816M	I. C, 16K RAM	
IC303	TOTX174-A	I. C, OPTICAL OUT	
IC401	MN1554PJZ-1	I. C, SYSTEM CONTROL	
IC402	BA4558FT1	I. C, MOTOR DRIVE	
IC601	MB88725BPJV	I. C, SYSTEM CONTROL&FL DRIVE	
IC602	RCD0003	I. C, REMOTE CONTROL RECEIVER	
IC801	MN6472	I. C, DIF. &D/A CONV.	
IC803-806	M5219FP	I. C, OP AMP	
IC807, 808	M5238FPTA	I. C, BUFFER AMP	
IC871	M5218L	I. C, HEADPHONES AMP	
		TRANSISTOR(S)	
Q11	2SD1862QRTV6	TRANSISTOR	
Q12	2SC3311QRSTA	TRANSISTOR	
Q13	2SA1309QRSTA	TRANSISTOR	
Q14	2SB1238QSTV6	TRANSISTOR	
Q15	2SC3311QRSTA	TRANSISTOR	
Q16	2SA1309QRSTA	TRANSISTOR	
Q351	DTA124EST	TRANSISTOR	
Q401	2SD1862QRTV6	TRANSISTOR	
Q402	2SB1240QRTV6	TRANSISTOR	
Q403	2SD1862QRTV6	TRANSISTOR	
Q404	2SB1240QRTV6	TRANSISTOR	
Q405, 406	2SC3311QRSTA	TRANSISTOR	
Q407	DTC124ESTP	TRANSISTOR	
Q601, 602	DTC114ESTP	TRANSISTOR	
Q801, 802	2SC3311QRSTA	TRANSISTOR	
Q803, 804	2SD1450RSTTA	TRANSISTOR	
Q851	DTA114ESTP	TRANSISTOR	
Q852	2SA1309QRSTA	TRANSISTOR	
Q853	DTA124EST	TRANSISTOR	
Q854	DTC124ESTP	TRANSISTOR	
Q855	DTA124EST	TRANSISTOR	
Q871, 872	2SD1450RSTTA	TRANSISTOR	
Q873, 874	2SC3311QRSTA	TRANSISTOR	
Q901	DTA124EST	TRANSISTOR	
Q903, 904	2SC3311QRSTA	TRANSISTOR	
		DIODE(S)	
D11-19	SVDS5688GT3	DIODE	⚠

Ref. No.	Part No.	Part Name & Description	Remarks
D20, 21	MA4082MTA	DIODE	
D22	MA4330MTA	DIODE	
D23	MA4062HTA	DIODE	
D24	MA4082MTA	DIODE	
D301, 302	MA4051MTA	DIODE	
D401	MA4039MTA	DIODE	
D601-609	1SS254TA	DIODE	
D610	SVGDPG7851Y	DIODE	
D611	SVGDAY7851	DIODE	
D612	1SS254TA	DIODE	
D614	1SS254TA	DIODE	
D803-806	1SS254TA	DIODE	
D851	1SS254TA	DIODE	
D852	MA29WATA	DIODE	
D853, 854	1SS254TA	DIODE	
D901-904	1SS254TA	DIODE	
		I. C. PROTECTOR(S)	
ICP1, 2	SRUF38	IC PROTECTOR	(EB, GC, PX)
ICP11, 12	SRUN15T	IC PROTECTOR	(EB)
		VARIABLE RESISTOR(S)	
VR871	EVJCB0F02A15	V. R, HEADPHONES LEVEL	
		COIL(S)	
L1, 2	SLQX400-D	COIL	⚠
L303	RLQZP5R6KT-Y	COIL	
L401, 402	RLQZP3R3KT-Y	COIL	
L601	EXCELSA35	COIL	
L801, 802	RLQZP3R3KT-Y	COIL	
L871-873	RLQZP3R3KT-Y	COIL	
		FUSE(S)	
F1	XBA2C012TB0	FUSE	⚠(E, EB, EG, GN)
F1	XBA2C025TB0	FUSE	⚠(GC, PX)
		TRANSFORMER(S)	
T1	SLTD5K097SE	POWER TRANSFORMER	⚠(E, EG)
T1	SLTD5K098SG	POWER TRANSFORMER	⚠(EB, GN)
T1	SLTD5K099SX	POWER TRANSFORMER	⚠(GC, PX)
		OSCILLATOR(S)	

Ref. No.	Part No.	Part Name & Description	Remarks
X801	SVQ49U338S	OSCILLATOR	
		DISPLAY TUBE	
FL601	RSL0038-F	DISPLAY TUBE	
		SWITCH(ES)	
S1	ESB8249V	SW, POWER	⚠
S2	SSR187-1	SW, VOLTAGE SELECTOR	(GC, PX) ⚠
S101	SSPD17	SW, OPEN/CLOSE DET.	
S102	SSPD18	SW, OPEN/CLOSE DET.	
S601	EVQQTG05R	SW, SIDE A/B	
S602	EVQQTG05R	SW, SEARCH	
S603	EVQQTG05R	SW, PROGRAM	
S604	EVQQTG05R	SW, TAPE LENGTH	
S605	EVQQTG05R	SW, PEAK SEARCH	
S606	EVQQTG05R	SW, DISPLAY ON/OFF	
S607	EVQQTG05R	SW, RECALL	
S608	EVQQTG05R	SW, SEARCH	
S609	EVQQTG05R	SW, JUST TIME	
S610	EVQQTG05R	SW, TIME MODE	
S611	EVQQTG05R	SW, CLEAR	
S612	EVQQTG05R	SW, NUMERIC 1	
S613	EVQQTG05R	SW, NUMERIC 5	
S614	EVQQTG05R	SW, NUMERIC 9	
S615	EVQQTG05R	SW, NUMERIC 13	
S616	EVQQTG05R	SW, NUMERIC 17	
S617	EVQQTG05R	SW, NUMERIC 0	
S618	EVQQTG05R	SW, OPEN/CLOSE	
S619	EVQQTG05R	SW, NUMERIC 2	
S620	EVQQTG05R	SW, NUMERIC 6	
S621	EVQQTG05R	SW, NUMERIC 10	
S622	EVQQTG05R	SW, NUMERIC 14	
S623	EVQQTG05R	SW, NUMERIC 18	
S624	EVQQTG05R	SW, NUMERIC >20	
S625	EVQQTG05R	SW, STOP	
S626	EVQQTG05R	SW, NUMERIC 3	
S627	EVQQTG05R	SW, NUMERIC 7	
S628	EVQQTG05R	SW, NUMERIC 11	
S629	EVQQTG05R	SW, NUMERIC 15	
S630	EVQQTG05R	SW, NUMERIC 19	
S631	EVQQTG05R	SW, PAUSE	
S632	EVQQTG05R	SW, NUMERIC 4	
S633	EVQQTG05R	SW, NUMERIC 8	
S634	EVQQTG05R	SW, NUMERIC 12	
S635	EVQQTG05R	SW, NUMERIC 16	
S636	EVQQTG05R	SW, NUMERIC 20	
S637	EVQQTG05R	SW, PLAY	
S638	RSS3A18YA-H	SW, TIMER	
S639	EVQQTG05R	SW, AUTO CUE	
		CONNECTOR(S) & SOCKET(S)	

Ref. No.	Part No.	Part Name & Description	Remarks
BT601	REX0144	CONNECTOR ASS'Y(7P)	
CN11A, B	RJS1A1703	CONNECTOR(6P)	
CN301-303	RJU003K006M1	SOCKET(6P)	
CN304	RJU003K006M1	SOCKET(6P)	
CN401	SJT30543-V	CONNECTOR(5P)	
CN402	SJSD2221	CONNECTOR(22P)	
CN601-603	RJT003K006M	CONNECTOR(6P)	
CN604	RJT003K006M	CONNECTOR(6P)	
CN605-607	SJT30549BB1	CONNECTOR(5P)	
CN608	RJP7G172A	CONNECTOR(7P)	
CN609-611	SJS50581BB	SOCKET(5P)	
		FLAT CABLE(S)	
FC1	REZ0156	FLAT CABLE (6P)	
FC601	REZ0157	FLAT CABLE (6P)	
		JACK(S)	
JK1	SJS9236	JACK, AC INLET	⚠(E, EB, EG, GC, PX)
JK1	SJSD16	JACK, AC INLET	⚠(GN)
JK401	RJJ33T01	JACK, SYNCHRO EDIT	
JK801	RJH3201A	JACK, LINE OUT	
JK871	QJA0455ZC-A	JACK, HEADPHONE	
		COMPONENT COMBINATION(S)	
Z301-304	EXCELDR35V	COMBINATION PART	
Z801-803	EXCELDR35V	COMBINATION PART	
		<SERVO P.C.B>	
		INTEGRATED CIRCUIT(S)	
IC101	AN8373S	IC, SERVO AMP	
IC102	AN8374S	IC, SERVO PROCESSOR	
IC103	AN8377N	IC, B.T.L DRIVE	
		TRANSISTOR(S)	
Q101	2SA1547QSTV2	TRANSISTOR	
Q102	2SB1240QR	TRANSISTOR	
		VARIABLE RESISTOR(S)	
VR101	EVND3AA00B14	V.R, BEST EYE ADJ.	
VR102	EVND3AA00B14	V.R, TRACKING GAIN ADJ.	
VR103	EVND3AA00B14	V.R, TRACKING OFFSET ADJ.	
VR104	EVND3AA00B14	V.R, FOCUS GAIN ADJ.	
VR105	EVND3AA00B14	V.R, FOCUS OFFSET ADJ.	
VR106	EVND3AA00B24	V.R, TRACKING BALANCE ADJ.	
		MAGNET RESISTOR ELEMENT	
RA1	EWS7M0A00Q53	RESISTANCE UNIT	

Notes : • Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
• The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.)
Parts without these indications can be used for all areas.

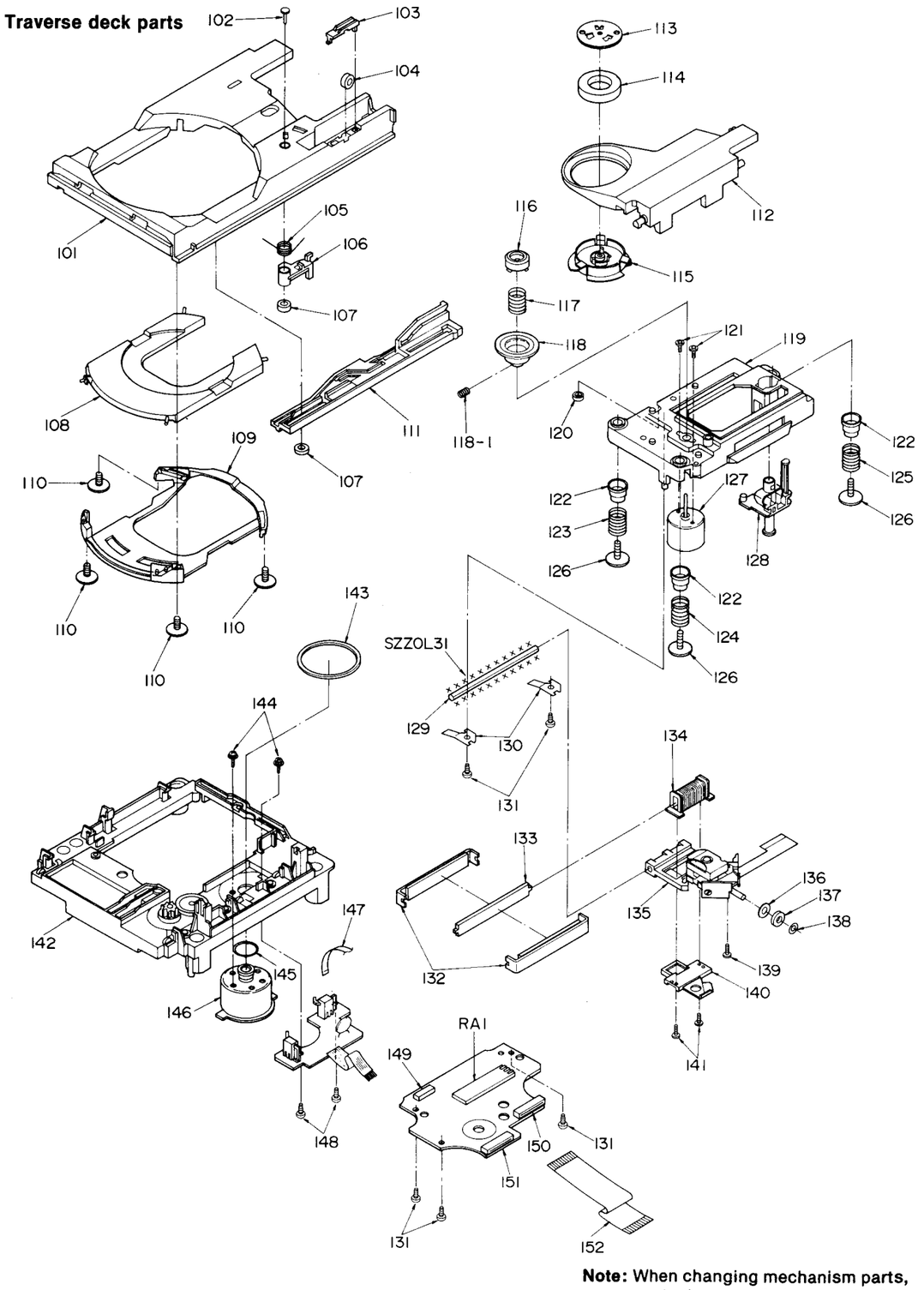
Ref. No.	Part No.	Part Name & Description	Remarks
		CABINET AND CHASSIS	
1	RKM0089-1K	TOP CASE	
2	SNE2129-1	SCREW	
3	XTB3+8JFZ	SCREW	
4	RGK0168B-K	TRAY ORNAMENT	
5	RFKHLPS70E-K	REAR PANEL ASS'Y	(E)
5	RFKHLPS70EBK	REAR PANEL ASS'Y	(EB, GN)
5	RGR0064A-C	REAR PANEL	(EG)
5	RGR0064B-A	REAR PANEL	(GC)
5	RFKHLPS70PXK	REAR PANEL ASS'Y	(PX)
6	RGU0030	POWER BUTTON	
7	RKU0014	BOTTOM BOARD	
8	RMKD073-1	CHASSIS	
9	RMM0048	POWER SWITCH ROD	
10	RMC0063	H.P. EARTH ANGLE	
11	RMN0056	FL HOLDER	
12	SHRD169	LED HOLDER	
13	SUSD144	EARTH CONTACT	
14	RGW0048	KNOB, H.P. LEVEL	
15	RMR0222	H.P. P.C.B FIXER	
16	RFKGLPS70E-K	FRONT PANEL ASS'Y	
16-1	RGB0020-1	MASH BADGE	
17	RFKNLPS70-K	FRONT GRILLE ASS'Y	
17-1	RKW0070	FL ORNAMENT BOARD	
18	RGK0213	POWER BUTTON SLEEVE	
19	RGU0264B	KNOB, OPERATION	
20	RGU0268B	KNOB, OPEN/CLOSE	
21	SBD143	KNOB, TIMER	
22	SHRD133	OP. CONDUCTION PLATE	
23	SHRD170	COVER, REMOTE CONT. RECEIV.	
24	SHE185-2	P.C.B. SUPPORTER	
25	SKLD8-E	FOOT	
26	XTBS3+8JFZ1	SCREW	
27	XTB3+16JFZ	SCREW	
28	XTB3+8F	SCREW	
29	VJA1034	PROTECTION CAP	
30	SJT390	FUSE HOLDER	⚠
		PACKING MATERIAL	
P1	RPG0445	PACKING CASE	(E, EB, EG, GC, GN)
P1	RPG0446	PACKING CASE	(PX)
P2	RPN0237A	CUSHION (FL)	
P3	RPN0237B	CUSHION (FR)	
P4	RPN0237C	CUSHION (BL)	

Ref. No.	Part No.	Part Name & Description	Remarks
P5	RPN0237D	CUSHION (BR)	
P6	XZB60X60A01	PROTECTION BAG(UNIT)	
P7	SPSD152	ACCESSORIES BOX	
P8	XZB26X17C03	PROTECTION BAG(F.B)	
		ACCESSORIES	
A1	RFKSLPS70E-K	INSTRUCTION MANUAL ASS'Y	(E)
A1	RQT0428-B	INSTRUCTION MANUAL	(EB)
A1	RQT0424-D	INSTRUCTION MANUAL	(EG)
A1	RQT0422-G	INSTRUCTION MANUAL	(GC, GN)
A1	RQT0427-M	INSTRUCTION MANUAL	(PX)
A2	RQA0013	WARRANTY CARD	(E, EB, EG, GC, GN)
A2	SQX7071-1	WARRANTY CARD	(PX)
A3	RQCB0169	SERVICENTER LIST	(E, EB, EG, GC, GN)
A4	SJA187	POWER CORD	(E, EG) ⚠
A4	SJA193	POWER CORD	(EB) ⚠
A4	RJA0004	POWER CORD	(GC, PX) ⚠
A4	SJA173	POWER CORD	(GN) ⚠
A5	SJP2249-4	PIN CORD	
A6	RAK-SL5005W	REMOTE CONTROL TRANSMITTER	
A7	RKK0008	BATTERY COVER	
A8	SJP9215	AC PLUG ADAPTOR	(GC, PX) ⚠
		TRAVERSE DECK	
101	RFKNLP370PAK	DISC TRAY ASS'Y	
102	RMQ0044	PIN	
103	SHRD150	ROLLER HOLDER	
104	SDRD12	ROLLER	
105	SUSD83	SPRING	
106	SIRD96-1	LOCK LEVER	
107	SFUMZ15R61	WASHER	
108	SIRD98-3	DISC TRAY	
109	SIRD107-1	TRAY BASE	
110	SNSD36	SCREW	
111	SIRD40-2	RACK GEAR	
112	SIRD42-5	CLAMPER	
113	SOYD2	CLAMPER YOKE	
114	SOMD4	CLAMPER MAGNET	
115	SIRD51-1	CLAMPER HOLDER	
116	SDOD29-2	RING	
117	SRQA010N04	SPRING	
118	SDOD28-1E	TURNTABLE	
118-1	XXE26D5	SCREW	
119	SISD22-1	TRAVERSE BASE	
120	SHGD148	STOPPER RUBBER	

Ref. No.	Part No.	Part Name & Description	Remarks
121	XYN2+C8	SCREW	
122	SHGD153-1	CUSHION RUBBER	
123	SUSD137-1	SPRING(B)	
124	SUSD136-1	SPRING(A)	
125	SUSD145-1	SPRING(C)	
126	SNSD33	SCREW	
127	SJGDRF310T-2	SPINDLE MOTOR	
128	SHRD177-1	LOCK UNIT	
129	SUXD123-1	GUIDE SHAFT	
130	SUWD112	GUIDE SHAFT HOLDER	
131	XTB3+10G	SCREW	
132	SOYD21-E	YOKE(A)	
133	SOYD22	YOKE(B)	
134	SORD38-E	COIL	
135	SOAD70A	OPTICAL PICKUP	
136	SHWD33	WASHER	
137	SORD37	ROLLER	
138	SHWD34	WASHER	
139	SNSD31	SCREW	
140	SHRD176-E	COIL HOLDER	
141	XTB2+5G	SCREW	
142	RFKNLP370PBK	LOADING BASE ASS'Y	
142-1	XYN26+F7	SCREW	
142-2	RMG0050	MOTOR RUBBER	
143	SMBD7-2	BELT	
146	SIRD94-E	LOADING MOTOR ASS'Y	
147	SIKD150051F	FLAT CABLE	
148	XTB3+8G	SCREW	
149	EMCS0552MP	CONNECTOR(5P)	
150	SJSD1722M	SOCKET(17P)	
151	SJSD2222M	SOCKET(22P)	
152	SIKD150221-1	FLAT CABLE	

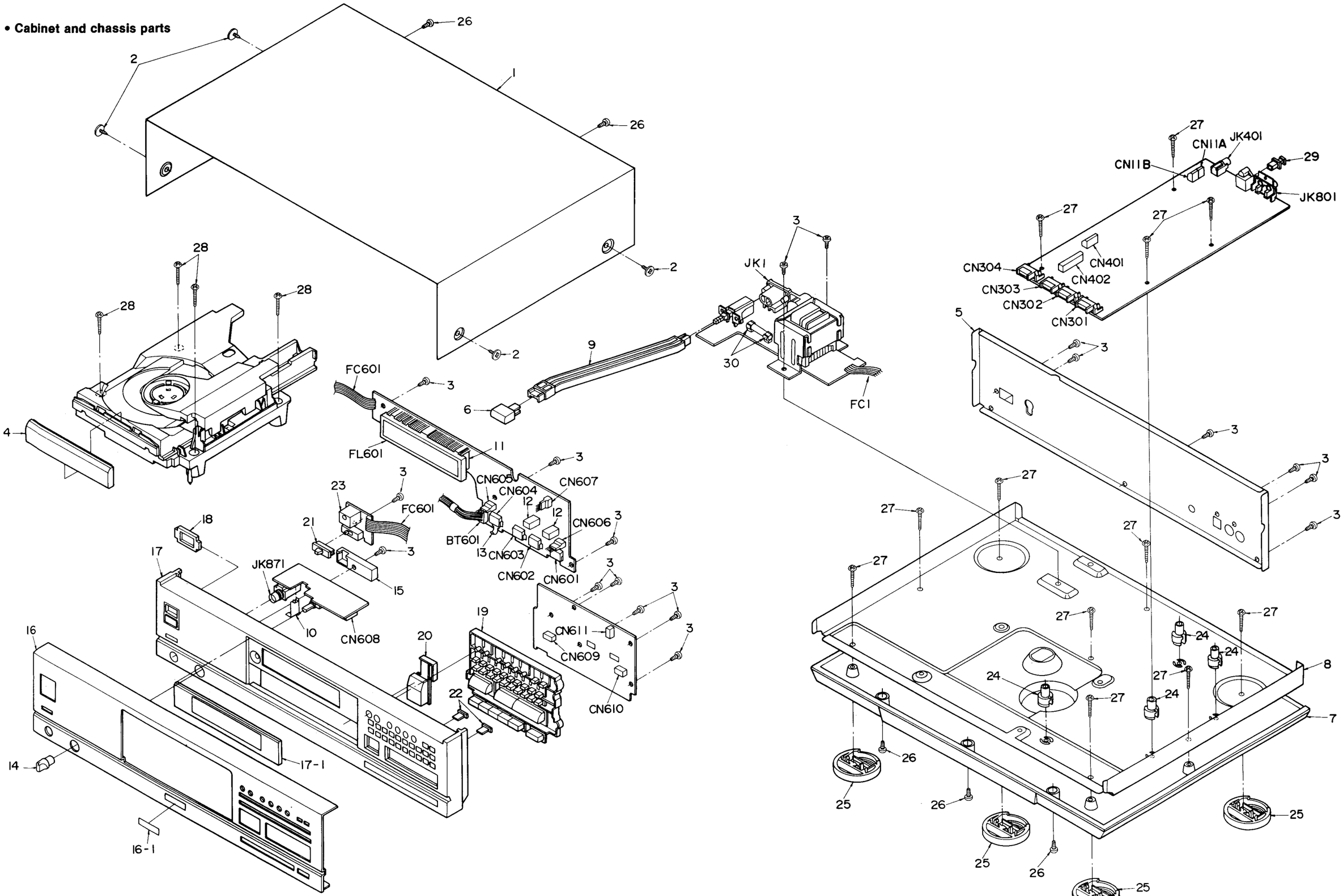
■ EXPLODED VIEWS

• Traverse deck parts



Note: When changing mechanism parts, apply the specified grease to the areas marked "× ×" as shown in the drawing.

• **Cabinet and chassis parts**



■ RESISTORS & CAPACITORS

Notes : * Capacity valuse are in microfarads (uF) unless specified otherwise, P=Pico-farads(pF) F=Farads(F)
* Resistance values are in ohms, unless specified otherwise, 1K=1,000(OHM) , 1M=1,000k(OHM)

Ref. No.	Part No.	Values & Remarks
		RESISTOR(S)
R11	ERDS2TJ331T	1/4W 330
R12	ERDS2TJ471T	1/4W 470
R13-17	ERDS2TJ102T	1/4W 1K
R301-306	ERDS2TJ472T	1/4W 4.7K
R307	ERDS2TJ104T	1/4W 100K
R308	ERDS2TJ102T	1/4W 1K
R309	ERDS2TJ472T	1/4W 4.7K
R310	ERDS2TJ182T	1/4W 1.8K
R311	ERDS2TJ272T	1/4W 2.7K
R312	ERDS2TJ561T	1/4W 560
R314	ERDS2TJ822T	1/4W 8.2K
R315	ERDS2TJ102T	1/4W 1K
R351	ERDS2TJ103T	1/4W 10K
R352	ERDS2TJ154T	1/4W 150K
R353	ERDS2TJ123T	1/4W 12K
R354	ERDS2TJ154T	1/4W 150K
R355, 356	ERDS2TJ333T	1/4W 33K
R357	ERDS2TJ8R2	1/4W 8.2
R358, 359	ERDS2TJ101T	1/4W 100
R401-408	ERDS2TJ221T	1/4W 220
R409-420	ERDS2TJ472T	1/4W 4.7K
R421, 422	ERDS2TJ913T	1/4W 91K
R423, 424	ERDS2TJ124T	1/4W 120K
R425	ERDS2TJ101T	1/4W 100
R427	ERDS2TJ472T	1/4W 4.7K
R428	ERDS2TJ273T	1/4W 27K
R429, 430	ERDS2TJ102T	1/4W 1K
R431	ERDS2TJ472T	1/4W 4.7K
R433, 434	ERDS2TJ472T	1/4W 4.7K
R435	ERDS2TJ221T	1/4W 220
R601-608	ERDS2TJ472T	1/4W 4.7K
R609	ERDS2TJ104T	1/4W 100K
R610, 611	ERDS2TJ121	1/4W 120
R801-808	ERDAS3J333T	1/4W 33K
R809-816	ERDAS3J223T	1/4W 22K
R817-824	ERDAS3J473T	1/4W 47K
R825-828	ERDAS3G153T	1/4W 15K
R829-832	ERDAS3G332T	1/4W 3.3K
R833-836	ERDAS3G153T	1/4W 15K
R837, 838	ERDAS3G822T	1/4W 8.2K
R839, 840	ERDAS3G182T	1/4W 1.8K
R841, 842	ERDAS3J105T	1/4W 1M
R843, 844	ERDAS3G103T	1/4W 10K
R845, 846	ERDAS3G153T	1/4W 15K
R847, 848	ERDAS3G183	1/4W 18K
R849, 850	ERDAS3J100T	1/4W 10

Ref. No.	Part No.	Values & Remarks
R851, 852	ERDAS3J330T	1/4W 33
R853, 854	ERDAS3J332T	1/4W 3.3K
R855, 856	ERDAS3J102T	1/4W 1K
R857-860	ERDAS3J471T	1/4W 470
R861, 862	ERDAS3J124T	1/4W 120K
R863, 864	ERDS2TJ221T	1/4W 220
R865-868	ERDS2TJ102T	1/4W 1K
R869	ERDS2TJ472T	1/4W 4.7K
R870	ERDS2TJ332T	1/4W 3.3K
R871, 872	ERDS2TJ153T	1/4W 15K
R873-876	ERDS2TJ183T	1/4W 18K
R877, 878	ERDS2TJ224T	1/4W 220K
R879, 880	ERDS2TJ473T	1/4W 47K
R881, 882	ERDS2TJ101T	1/4W 100
R883, 884	ERDS2TJ222T	1/4W 2.2K
R885	ERDS2TJ102T	1/4W 1K
R886	ERDS2TJ103T	1/4W 10K
R887	ERDS2TJ682T	1/4W 6.8K
R888	ERDS2TJ333T	1/4W 33K
R889	ERDS2TJ474T	1/4W 470K
R891, 892	ERDS2TJ472T	1/4W 4.7K
R901	ERDS2TJ102T	1/4W 1K
R902	ERDS2TJ472T	1/4W 4.7K
R903	ERDS2TJ102T	1/4W 1K
R905, 906	ERDS2TJ563T	1/4W 56K
R907, 908	ERDS2TJ391T	1/4W 390
		CAPACITOR(S)
C1	ECKDKC103PF2	400V 0.01U ⚠
C10	ECA1CPXS222E	16V 2200U
C11	ECA1CPXS102E	16V 1000U
C12	ECBT1C103NS5	16V 0.01U
C13	ECEA1AU101B	10V 100U
C14	ECBT1C103NS5	16V 0.01U
C15	ECEA0JU470B	6.3V 47U
C16, 17	ECEA1CU331B	16V 330U
C18	ECBT1C103NS5	16V 0.01U
C19, 20	ECFR1E103KR	25V 0.01U
C21	ECEA1CU221B	16V 220U
C22	ECBT1C103NS5	16V 0.01U
C23, 24	ECA1APXS101	10V 100U
C25, 26	ECEA1CU101B	16V 100U
C27	ECEA1EU101B	25V 100U
C28, 29	ECEA1HU101	50V 100U
C30	ECFR1E104ZF5	25V 0.1U
C31, 32	ECBT1C103NS5	16V 0.01U
C33	ECEA1CU102B	16V 1000U
C301	ECFR1E104ZF5	25V 0.1U

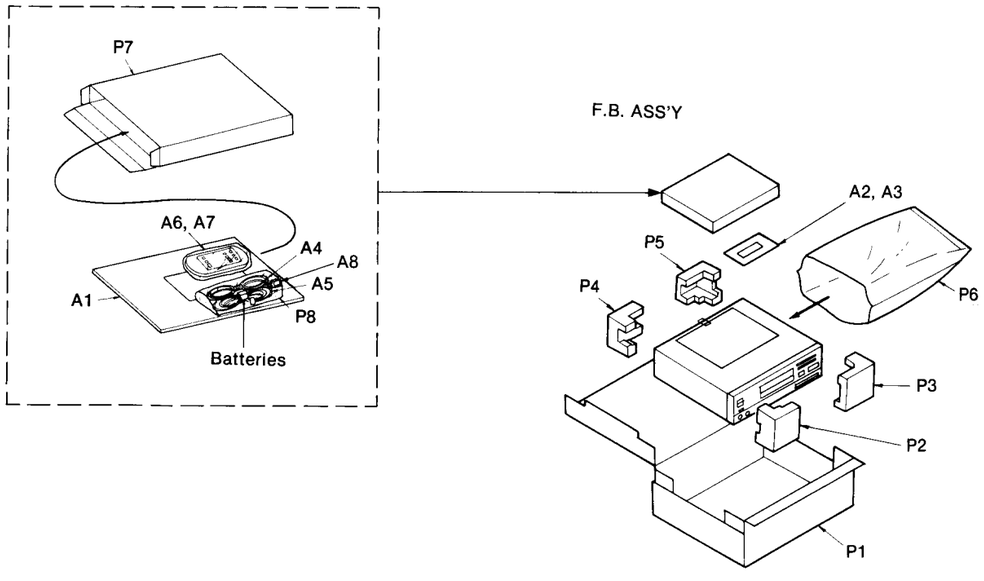
Ref. No.	Part No.	Values & Remarks
C302	ECBT1C103NS5	16V 0.01U
C303	ECBT1H6R8K5	50V 6.8P
C304	ECFR1E104ZF5	25V 0.1U
C305, 306	ECEA0JU101B	6.3V 100U
C307, 308	ECFR1E104ZF5	25V 0.1U
C309	ECBT1C103NS5	16V 0.01U
C310, 311	ECFR1E104ZF5	25V 0.1U
C312	ECBT1H330J5	50V 33P
C313	ECFR1E104ZF5	25V 0.1U
C314	ECEA0JU470B	6.3V 47U
C315	ECBT1C103NS5	16V 0.01U
C351	ECBT1H102KB5	50V 1000P
C401	ECFR1E104ZF5	25V 0.1U
C402	ECEA0JU470B	6.3V 47U
C403, 404	ECFR1E104ZF5	25V 0.1U
C405, 406	ECBT1H102KB5	50V 1000P
C407	ECEA1HU010B	50V 1U
C409-411	ECBT1H102KB5	50V 1000P
C412, 413	ECBT1C103NS5	16V 0.01U
C420	ECKW1H103KB5	50V 0.01U
C601	ECBT1C103NS5	16V 0.01U
C602	ECEA1CKS100	16V 10U
C603	ECFR1E104ZF5	25V 0.1U
C801-804	ECBT1H151KB5	50V 150P
C805, 806	ECBT1H101KB5	50V 100P
C807-810	ECBT1H680J5	50V 68P
C811, 812	ECEA1CBZ330B	16V 33U
C813, 814	ECHR1H822GZ3	50V 8200P
C815, 816	ECHR1H331GZ3	50V 330P
C817, 818	ECHR1H102GZ3	50V 1000P
C819, 820	ECHR1H121GZ3	50V 120P
C821, 822	ECEA1CBZ330B	16V 33U
C823, 824	ECHR1H102GZ3	50V 1000P
C825, 826	ECQV1H334JZ3	50V 0.33U
C827, 828	ECEA0JU331B	6.3V 330U
C829, 830	ECA1APXS101	10V 100U
C831, 832	ECEA1EKN2R2	25V 2.2U
C835, 836	ECBT1H5R6K5	50V 5.6P
C837	ECFR1E104ZF5	25V 0.1U
C838	ECBT1C103NS5	16V 0.01U
C851	ECEA0JU471B	6.3V 470U
C852	ECEA1CN100SB	16V 10U
C853-860	ECBT1H100J	50V 10P
C871, 872	ECEA1AKN100B	10V 10U
C873, 874	ECEA1AN470SB	10V 47U
C875-880	ECBT1C103NS5	16V 0.01U
C901	ECEA0JK220B	6.3V 22U

Ref. No.	Part No.	Values & Remarks
		<SERVO P.C.B.>
		RESISTOR(S)
R101	ERDS2TJ471	1/4W 470
R102	ERJ6GEYJ120V	1/10W 12
R103	ERJ6GEYJ122	1/10W 1.2K
R104	ERJ6GEYJ471	1/10W 470
R105, 106	RRJ6GCJ102TE	1/6W 1K
R108	ERJ6GEYJ224V	1/10W 220K
R110	ERDS2TJ222	1/4W 2.2K
R111	ERJ6GEYJ154V	1/10W 150K
R113	ERJ6GEYJ472V	1/10W 4.7K
R114	ERJ6GEYJ683V	1/10W 68K
R116	ERJ6GEYJ332V	1/10W 3.3K
R117	ERJ6GEYJ123	1/10W 12K
R118	ERJ6GEYJ333V	1/10W 33K
R119	RRJ6GCJ223TE	1/6W 22K
R122	ERDS2TJ104	1/4W 100K
R123	ERJ6GEYJ470V	1/10W 47
R124	RRJ6GCJ103TE	1/6W 10K
R125	RRJ6GCJ222TE	1/6W 2.2K
R127	ERDS2TJ681	1/4W 680
R128	RRJ6GCJ103TE	1/6W 10K

Ref. No.	Part No.	Values & Remarks
		CAPACITOR(S)
C101	ECEA1CKS220I	16V 22U
C102	ECEA1HKS010I	50V 1U
C103	ECEA1CKS220I	16V 22U
C106	RCUV1E104ZF	25V 0.1U
C107	ECEA0GKS101I	4V 100U
C108	ECEA0JKS470I	6.3V 47U
C109	ECEA1HKS010I	50V 1U
C110	RCUV1H681KB	50V 680P
C111	ECUV1C224KR	16V 0.22U
C112	RCUV1H331KB	50V 330P
C113	ECEA1HSN010I	50V 1U
C114	RCUV1E333KB	25V 0.033U
C115	ECEA1HSN010I	50V 1U
C116	RCUV1E333KB	25V 0.033U
C117	ECBT1H102KB5	50V 0.001U
C119, 120	ECEA1CKN4R7I	16V 4.7U
C122	ECEA0JKS220I	6.3V 22U
C123	RCUV1E104ZF	25V 0.1U
C124	ECUV1E823KB	25V 0.082U
C125	ECUV1C224KR	16V 0.22U
C127	ECEA0JKF101I	6.3V 100U
C128	ECEA1CKA101	16V 100U
C132	ECUV1E104KB	25V 0.1U
C133	RCUV1H330KC	50V 33P

Ref. No.	Part No.	Values & Remarks
C134, 135	ECUV1C224KR	16V 0.22U
C136	ECEA0GKS101I	4V 100U
C138	RCUV1E104ZF	25V 0.1U
C139	RCUV1H470KC	50V 47P
C140	RCUV1E103KB	25V 0.01U
C141-144	RCUV1H470KC	50V 47P
C145	ECEA0JKF101I	6.3V 100U
C146	RCUV1H181KC	50V 180P
C147	RCUV1H472KB	50V 4700P
C148	ECEA1ESN4R7I	25V 4.7U
C149	RCUV1E104ZF	25V 0.1U
C150	RCUV1E103KB	25V 0.01U

■ PACKING



Printed in Japan
H900208400 YY/TN